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sets can be downloaded from our Web site (http://interactome.dfci.harvard.edu/S_cerevisiae).

Supporting Online Material

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Ceramide Biogenesis Is Required for Radiation-Induced Apoptosis in the Germ Line of *C. elegans*

Xinzhu Deng,¹ Xianglei Yin,¹ Richard Allan,¹ Diane D. Lu,¹ Carine W. Maurer,² Adriana Haimovitz-Friedman,³ Zvi Fuks,³ Shai Shaham,² Richard Kolesnick^{1*}

Ceramide engagement in apoptotic pathways has been a topic of controversy. To address this controversy, we tested *loss-of-function* (*lf*) mutants of conserved genes of sphingolipid metabolism in *Caenorhabditis elegans*. Although somatic (developmental) apoptosis was unaffected, ionizing radiation-induced apoptosis of germ cells was obliterated upon inactivation of ceramide synthase and restored upon microinjection of long-chain natural ceramide. Radiation-induced increase in the concentration of ceramide localized to mitochondria and was required for BH3-domain protein EGL-1-mediated displacement of CED-4 (an APAF-1-like protein) from the CED-9 (a Bcl-2 family member)/CED-4 complex, an obligate step in activation of the CED-3 caspase. These studies define CEP-1 (the worm homolog of the tumor suppressor p53)-mediated accumulation of EGL-1 and ceramide synthase-mediated generation of ceramide through parallel pathways that integrate at mitochondrial membranes to regulate stress-induced apoptosis.

Although studies that use genetic deficiency in ceramide production support it as essential for apoptosis in diverse models (1), many have questioned whether ceramide functions as a bona fide transducer of apoptotic signals (2). One reason for skepticism is that, despite delineation of a number of ceramide-activated proteins, no single protein has been identified as mediator of ceramide-induced apoptosis. Recent studies have suggested an alternate mode of ceramide action, based on its capacity to self-associate and locally rearrange membrane bilayers into ceramide-rich macrodomains (1 to 5 μm in diameter), which are sites of protein concentration and oligomerization (3). Ceramide may thus mediate apoptosis through its ability to reconfigure membranes, coordinating protein complexation at critical junctures of signaling cascades.

To establish the role of ceramide definitively, we used a model of radiation-induced apoptosis in *Caenorhabditis elegans* germ cells (4). Germ-line stem cells, located at the distal gonad tip, divide incessantly throughout adult life, with daughter cells arresting in meiotic prophase. Upon exiting prophase, germ cells become sensitive to radiation-induced apoptosis, detected morpholog-

ically just proximal to the bend of the gonadal arm (5). This apoptotic pathway is antagonized by the ABL-1 tyrosine kinase, requiring sequentially the cell cycle checkpoint genes *rad-5*, *hus-1*, and *mrt-2*; the *C. elegans* p53 homolog *cep-1*; and the genes making up the conserved apoptotic machinery, the caspase *ced-3*, the apoptotic protease activating factor 1-like protein *ced-4*, the Bcl-2 protein *ced-9*, and the BH3-domain protein *egl-1*. This pathway differs from apoptotic somatic cell death, which is not subject to upstream checkpoint regulation via the CEP-1 pathway (5, 6).

We identified conserved genes that regulate *C. elegans* sphingolipid intermediary metabolism and tested deletion alleles (Table 1 and table S1). Screening for mutants resistant to radiation-induced germ cell apoptosis revealed apoptosis suppression in only deletion mutants of *hyl-1* and *lagr-1*, two of the three ceramide synthase (CS) genes (Fig. 1A). CS gene products regulate de novo ceramide biosynthesis, acylating sphinganine to form dihydroceramide that is subsequently converted to ceramide by a desaturase (7). CSs contain six to seven putative transmembrane domains and a Lag1p motif [which confers enzyme activity (8)], regions conserved in the *C. elegans* orthologs. The deleted CS sequences in *hyl-1(ok976)* and *lagr-1(gk327)* result in frameshifts that disrupt the Lag1p motifs (fig. S1A). We detected a ~1.6-kb *hyl-1* transcript in wild-type (WT) worms and a smaller ~1.35-kb transcript in *hyl-1(ok976)*, whereas we observed a ~1.4-kb *lagr-1* transcript in WT worms and a ~1.25-kb transcript in *lagr-1(gk327)* (fig. S1B). In contrast, a deletion mutant of the third *C. elegans*

CS (9, 10), *hyl-2(ok1766)*, lacking a 1626-base pair fragment of the *hyl-2* gene locus that eliminates exons 2 to 5 corresponding to 74% of the coding sequence, displayed no defect in germ cell death (fig. S1C).

In N2 WT strain young adults, apoptotic germ cells gradually increased in abundance with age from a baseline of 0.7 ± 0.1 to 1.8 ± 0.2 corpses per distal gonad arm over 48 hours. Exposure to a 120-gray (Gy) ionizing radiation dose increased germ cell apoptosis to 5.2 ± 0.3 cells 36 to 48 hours after treatment. In contrast, in *hyl-1(ok976)* and *lagr-1(gk327)* animals, age-dependent and radiation-induced germ cell apoptosis were nearly abolished (Fig. 1A). Similar effects were observed in the *lagr-1(gk327);hyl-1(ok976)* double mutant (Fig. 1B). The rate of germ cell corpse removal was unaffected in CS mutants, excluding the possibility that defective corpse engulfment elevated corpse numbers (table S2). In contrast, *loss-of-function* (*lf*) mutations of *hyl-1* or *lagr-1* did not affect developmental somatic cell death, nor did the *lf* *hyl-2(ok1766)* mutation (table S3). These studies indicate a requirement for two *C. elegans* CS genes for radiation-induced germline apoptosis.

To confirm ceramide as critical for germline apoptosis, we injected C_{16} -ceramide into gonads of young adult WT worms. C_{16} -ceramide is the predominant ceramide species in apoptosis induction by diverse stresses in multiple organisms (11) and in low abundance in *C. elegans* (12, 13). C_{16} -ceramide microinjection resulted in time- and dose-dependent increases in germ cell apoptosis (Fig. 1C), with a median effective dose of ~0.05 μM gonadal ceramide. Peak effect occurred at ~0.1 μM gonadal ceramide at 36 hours (6.6 ± 0.8 versus 1.5 ± 0.4 cell corpses per distal gonad arm, $P < 0.0001$), qualitatively and quantitatively mimicking the 120-Gy effect in WT worms. In contrast, C_{16} -dihydroceramide, which differs from C_{16} -ceramide in a trans double bond at sphingoid base position four to five, was without effect (0.71 ± 0.28 cell corpses per distal gonad arm at ~1 μM), indicating specificity for ceramide in apoptosis induction. Furthermore, C_{16} -ceramide microinjection into *lagr-1(gk327);hyl-1(ok976)* animals (~1 μM gonadal ceramide) resulted in a 5.7-fold increase in germ cell apoptosis (from 0.60 ± 0.17 to 3.43 ± 0.88 , $P < 0.0001$) (Fig. 1D). Note that the baseline level of apoptosis in *lagr-1(gk327);hyl-1(ok976)* was less than one-half that in WT worms. Moreover, ~0.005 μM gonadal ceramide, a concentration without impact on germ cell apoptosis, completely restored radiation (120 Gy)-induced apoptosis, an effect inhibitable in a *lf* *ced-3* background (Fig. 1E). C_{16} -ceramide's ability to bypass the genetic defect and restore the radiation-response pheno-

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type is strong evidence that *hyl-1* and *lagr-1* represent legitimate *C. elegans* CS genes. Animals with *sphk-1(ok1097)*, a null allele of sphingosine kinase (SPHK), which prevents conversion of ceramide to its anti-apoptotic derivative sphingosine 1-phosphate (S1P) (14), displayed

high baseline germ cell death and were hypersensitive to radiation-induced germ cell apoptosis (fig. S2, A and B), inhibitable (by $85 \pm 9\%$) in a *lagr-1(gk327);sphk-1(ok1097)* double mutant. Collectively, these studies identify ceramide as a critical effector of radiation-induced germ cell

apoptosis, although they do not define its mode of engaging the apoptotic pathway.

Inactivation of the *C. elegans* ABL-1 ortholog in the *lf* mutant *abl-1(ok171)* (or by RNA interference) increases baseline and post-radiation germ cell apoptosis, modeling radiation hypersensitivity

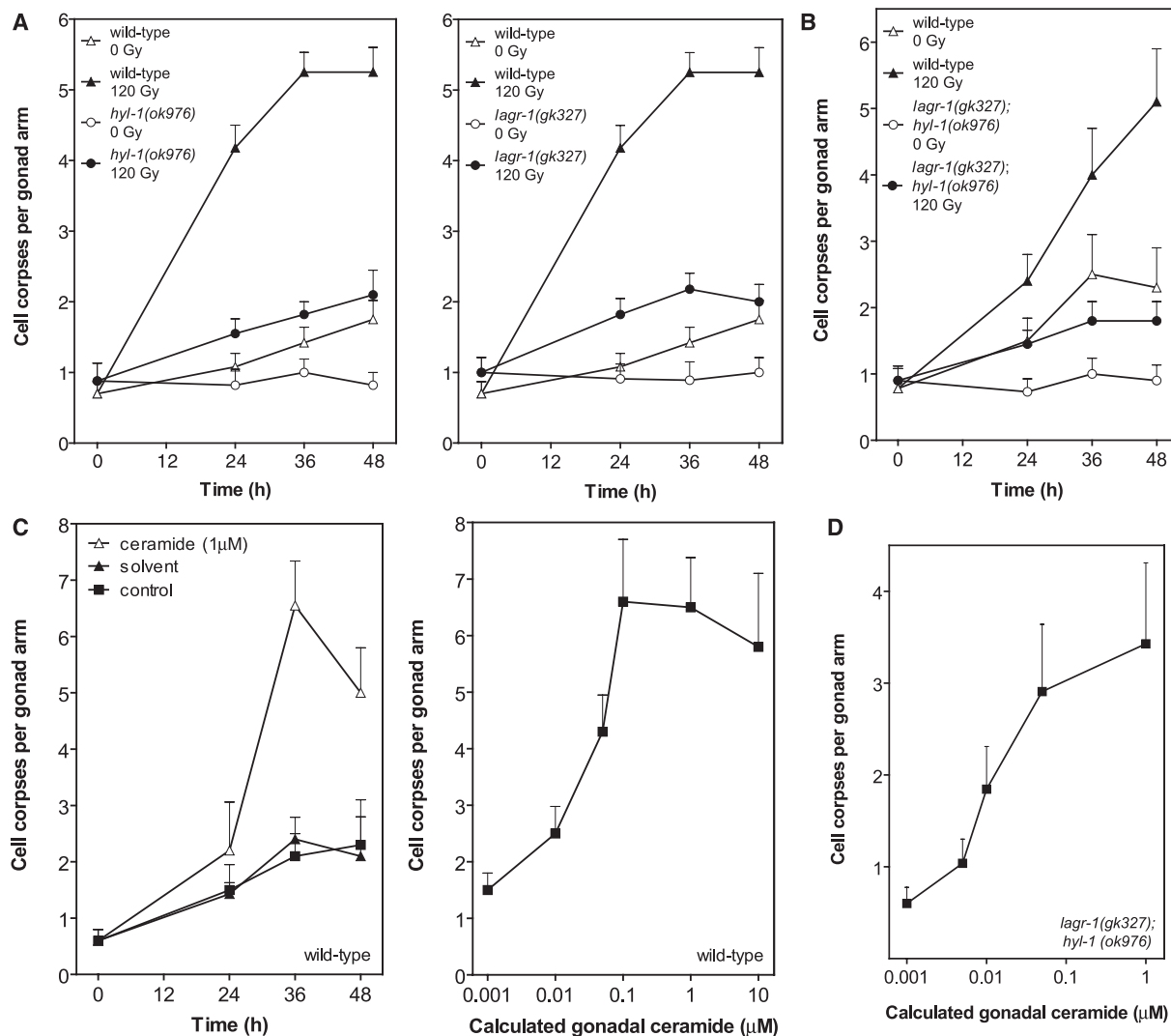
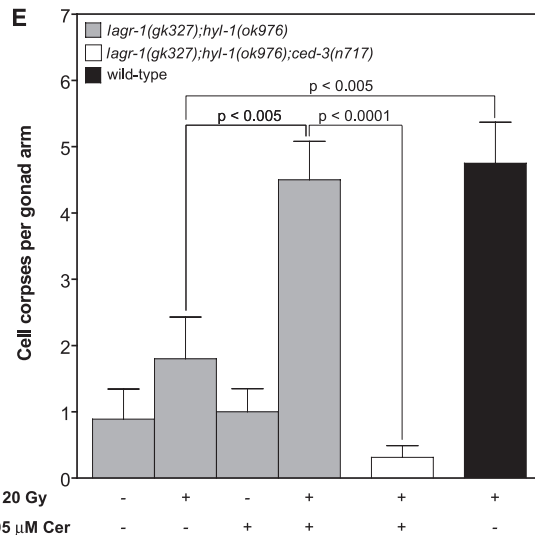


Fig. 1. If *hyl-1* and *lagr-1* prevent radiation-induced germ cell apoptosis, reversible by *C₁₆*-ceramide. WT and mutant worms were synchronized at 20°C and irradiated (A, B, and E) or injected with *C₁₆*-ceramide into the posterior gonad (C to E) at 24 hours after the L4 stage. The posterior gonad distal arm was scored for cell corpses under Nomarski optics. Time dependence of germ cell corpse induction in *hyl-1(ok976)* (left) and *lagr-1(gk327)* (right) (A) and in *lagr-1(gk327);hyl-1(ok976)* (B) after 120 Gy is shown. WT data are identical in (A), left and right; these panels were separated for clarity. *C₁₆*-ceramide microinjection induces time- (left) and dose-dependent (right, at 36 hours) germ cell apoptosis in WT worms (C) and dose-dependent apoptosis in *lagr-1(gk327);hyl-1(ok976)* at 36 hours (D). Gonadal ceramide concentration was calculated as described in the SOM. (E) Sublethal *C₁₆*-ceramide microinjection restores radiation (120 Gy)-induced germ cell apoptosis to *lagr-1(gk327);hyl-1(ok976)*. Data (mean \pm SEM, represented by error bars) are collated from ≥ 15 worms per group in (A) to (E).



phenotypes (15). To order CS action relative to ABL-1, we generated *hyl-1(ok976);abl-1(ok171)* and *lagr-1(gk327);abl-1(ok171)* and a triple mutant *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)*. If *hyl-1* or *lagr-1* in an *abl-1(ok171)* genetic background prevented the time-dependent increase in physiologic germ cell apoptosis and completely

blocked radiation-induced apoptosis (Fig. 2A, left). Similarly, *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)* displayed inhibition of baseline and radiation-induced germ cell apoptosis (Fig. 2A, right). Thus, increased germ cell apoptosis in irradiated *abl-1(ok171)* depends on the CS genes *hyl-1* and *lagr-1*.

In *C. elegans*, DNA damage activates the p53 homolog CEP-1, which is required for transcriptional up-regulation of the BH3-only proteins, EGL-1 and CED-13, that in turn activate the core apoptotic machinery (CED-9, CED-4, and CED-3) (6, 16). Exposure of *hyl-1(ok976)* and *lagr-1(gk327)* to 120 Gy increased *egl-1* transcripts

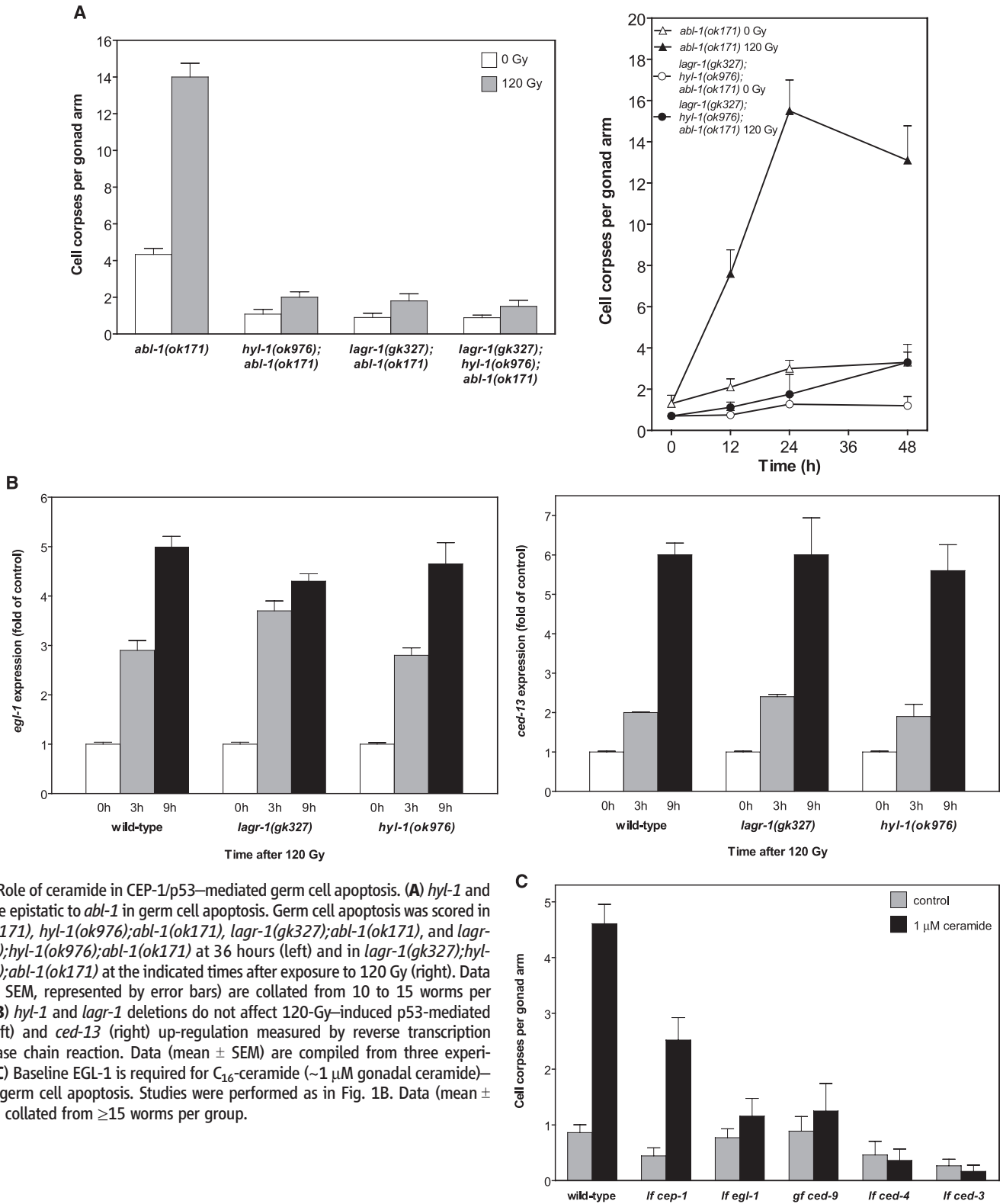


Fig. 2. Role of ceramide in CEP-1/p53-mediated germ cell apoptosis. **(A)** *hyl-1* and *lagr-1* are epistatic to *abl-1* in germ cell apoptosis. Germ cell apoptosis was scored in *abl-1(ok171)*, *hyl-1(ok976);abl-1(ok171)*, *lagr-1(gk327);abl-1(ok171)*, and *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)* at 36 hours (left) and in *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)* at the indicated times after exposure to 120 Gy (right). Data (mean \pm SEM, represented by error bars) are collated from 10 to 15 worms per group. **(B)** *hyl-1* and *lagr-1* deletions do not affect 120-Gy-induced p53-mediated *egl-1* (left) and *ced-13* (right) up-regulation measured by reverse transcription polymerase chain reaction. Data (mean \pm SEM) are compiled from three experiments. **(C)** Baseline EGL-1 is required for C_{16} -ceramide ($\sim 1 \mu M$ gonadal ceramide)-induced germ cell apoptosis. Studies were performed as in Fig. 1B. Data (mean \pm SEM) are collated from ≥ 15 worms per group.

four- to fivefold at 9 hours after irradiation (Fig. 2B, left), whereas *ced-13* expression was enhanced five- to sixfold (Fig. 2B, right)—levels comparable to those detected in irradiated WT worms. Thus, the loss of CS did not affect CEP-1 activation upon irradiation, suggesting that ceramide and CEP-1

might function in parallel, coordinately conferring radiation-induced germ cell death.

We reasoned that in contrast to radiation-induced germ cell apoptosis, which apparently requires increased abundance of both BH3-only proteins and ceramide, C_{16} -ceramide provided ex-

ogenously might act independent of p53-mediated *egl-1* expression by maximizing the effect of baseline EGL-1. In fact, microinjected C_{16} -ceramide partially restored germ cell death in *cep-1(gk138)* from 0.4 ± 0.13 to 2.5 ± 0.32 corpses per distal gonad arm (Fig. 2C) ($P < 0.001$). As C_{16} -ceramide

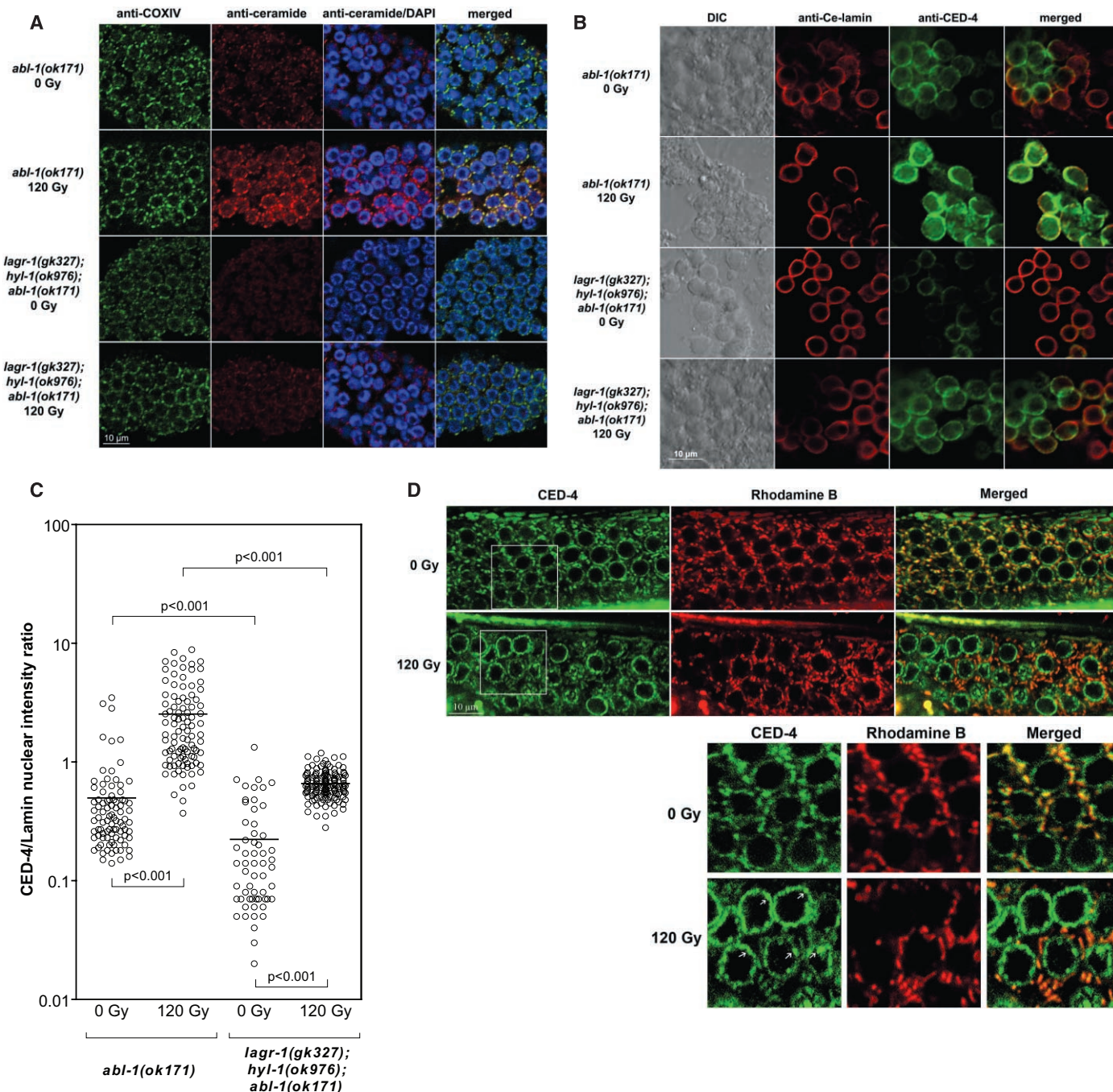


Fig. 3. Mitochondrial ceramide mediates CED-4 displacement. **(A)** Gonads were dissected from young adult *abl-1(ok171)* and *lagr-1(gk327); hyl-1(ok976); abl-1(ok171)* at 24 hours after 120 Gy and stained with anti-COX-IV antibody (green), anti-ceramide antibody (red), and 4',6'-diamidino-2-phenylindole (blue). **(B and C)** Germ cells were released from gonads of young adult *abl-1(ok171)* and *lagr-1(gk327); hyl-1(ok976); abl-1(ok171)* at 24 hours after 120 Gy and stained with anti-Ce-lamin (red) and anti-CED-4 (green). CED-4/lamin intensity in individual germ cell nuclei (circles) was measured using Metamorph software. Horizontal bars indicate means from ≥ 50 nuclei per group. In *lagr-1(gk327); hyl-1(ok976); abl-1(ok171)*, the baseline CED-4/lamin ratio is reduced

by 63%, and the post-radiation fold and absolute change are reduced by 40% and 78%, respectively, as compared with *abl-1(ok171)* animals. **(D)** L1 larvae of *opls219*, cultured in Rhodamine B-containing plates until the young adult stage, were exposed to 120 Gy, and GFP (CED-4) and Rhodamine B (mitochondria) signals were imaged at 36 hours post-irradiation. Images represent single confocal planes from the distal gonad of *opls219* (upper panels). Boxed insets (lower panels) were enlarged 1.75 times to ease the observation of colocalized CED-4/Rhodamine B mitochondrial yellow signal (top right bottom panel) pre-irradiation and green nuclear CED-4 platformlike structures post-irradiation (white arrows in bottom left lower panel).

Table 1. Role of *C. elegans* orthologs of sphingolipid metabolism in radiation-induced apoptosis. The family of sphingolipids and associated metabolic enzymes involved in ceramide intermediary metabolism, conserved from yeast to humans is shown on at left. Thick arrows designate the de novo ceramide synthetic pathway. Enzymes listed in bold indicate *C. elegans* enzymes for which *lf* alleles were screened for germ cell apoptosis at 36 hours post–120 Gy (shown at right). Apoptosis inhibition (+) was interpreted relative to WT-irradiated controls. Asterisks indicate hypersensitivity to radiation-induced apoptosis. At least 20 worms were counted per allele. SPT, serine palmitoyltransferase; 3-KSR, 3-ketosphinganine reductase; CerS, ceramide synthase; DES, dihydroceramide desaturase; CerK, ceramide kinase; SMase, sphingomyelinase; CDase, ceramidase; SphK, sphingosine kinase; S1PPL, S1P lyase.

<div><div>Serine + Palmitoyl CoA</div><div>↓ SPT</div><div>3-Ketosphinganine</div><div>↓ 3-KSR</div><div>Sphinganine</div><div>↓ CerS</div><div>Dihydroceramide</div><div>↓ DES</div><div>Ceramide</div><div>← CerK ← Ceramide-1-phosphate</div><div>CerS ↔ CDase</div><div>Sphingosine</div><div>↓ SphK</div><div>Sphingosine-1-phosphate (S1P)</div><div>↓ S1PPL</div><div>Long-chain aldehyde/ethanolamine phosphate</div></div>	<table><tr><th>Mammalian gene product</th><th><i>C. elegans</i> orthologous gene(s)</th><th>Sequence name</th><th>Alleles</th><th>Apoptosis inhibition</th></tr><tr><td>SPT 1</td><td><i>sptl-1</i></td><td>C23H3.4</td><td><i>ok1693</i></td><td>–</td></tr><tr><td>SPT 2</td><td><i>sptl-3</i></td><td>T22G5.5</td><td><i>ok1927</i></td><td>–</td></tr><tr><td>CerS</td><td><i>hyl-1</i></td><td>C09G4.1</td><td><i>ok976</i></td><td>+</td></tr><tr><td></td><td><i>hyl-2</i></td><td>K02G10.6</td><td><i>ok1766</i></td><td>–</td></tr><tr><td></td><td><i>lagr-1</i></td><td>Y6B3B.10</td><td><i>gk327</i> <i>gk331</i></td><td>+</td></tr><tr><td>Acid CDase</td><td></td><td>F27E5.1</td><td><i>ok564</i></td><td>–</td></tr><tr><td>SphK-1</td><td><i>ok1097</i></td><td>C34C6.5a,b</td><td><i>ok1097</i></td><td>–*</td></tr><tr><td>S1PPL 1</td><td><i>tag-38</i></td><td>B0222.4</td><td><i>tm470</i></td><td>–</td></tr><tr><td>CerK</td><td></td><td>T10B11.2</td><td><i>ok1252</i></td><td>–</td></tr><tr><td>Acid SMase</td><td><i>asm-1</i></td><td>B0252.2</td><td><i>kk-1</i></td><td>–</td></tr><tr><td></td><td><i>asm-2</i></td><td>ZK455.4</td><td><i>ok183</i></td><td>–</td></tr><tr><td></td><td><i>asm-3</i></td><td>W03G1.7a,b</td><td><i>tm2384</i></td><td>–</td></tr><tr><td>Neutral SMase</td><td></td><td>T27F6.6</td><td><i>tm2178</i></td><td>–</td></tr></table>	Mammalian gene product	<i>C. elegans</i> orthologous gene(s)	Sequence name	Alleles	Apoptosis inhibition	SPT 1	<i>sptl-1</i>	C23H3.4	<i>ok1693</i>	–	SPT 2	<i>sptl-3</i>	T22G5.5	<i>ok1927</i>	–	CerS	<i>hyl-1</i>	C09G4.1	<i>ok976</i>	+		<i>hyl-2</i>	K02G10.6	<i>ok1766</i>	–		<i>lagr-1</i>	Y6B3B.10	<i>gk327</i> <i>gk331</i>	+	Acid CDase		F27E5.1	<i>ok564</i>	–	SphK-1	<i>ok1097</i>	C34C6.5a,b	<i>ok1097</i>	–*	S1PPL 1	<i>tag-38</i>	B0222.4	<i>tm470</i>	–	CerK		T10B11.2	<i>ok1252</i>	–	Acid SMase	<i>asm-1</i>	B0252.2	<i>kk-1</i>	–		<i>asm-2</i>	ZK455.4	<i>ok183</i>	–		<i>asm-3</i>	W03G1.7a,b	<i>tm2384</i>	–	Neutral SMase		T27F6.6	<i>tm2178</i>	–
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is inactive in the *lfegl-1* mutant *egl-1(n1084n3082)* (Fig. 2C), it appears that there is a requirement for at least a baseline level of BH3-only proteins for ceramide-induced apoptosis. Consistent with this notion, C₁₆-ceramide administration did not increase *egl-1* and *ced-13* transcription (1.2 ± 0.1– and 0.8 ± 0.1–fold of control, respectively, at 5 hours). Furthermore, inactivating the core apoptotic machinery in *lfced-3(n717)* and *ced-4(n1162)* or in gain-of-function *ced-9(n1950)* animals, which abolish radiation-induced germline apoptosis, similarly abolished C₁₆-ceramide-induced death (Fig. 2C). Collectively, these data indicate that ceramide acts in conjunction with BH3-only proteins upstream of the mitochondrial commitment step of apoptosis in the *C. elegans* germ line.

As these studies point to a mitochondrial site of ceramide action, we devised an immune histochemical approach to evaluate whether ceramide might increase in the mitochondria of *C. elegans* germ cells. We took advantage of the increased frequency of germ cell apoptosis in *abl-1(ok171)*, anticipating a maximized ceramide signal upon irradiation in this strain. Gonads from unirradiated or irradiated worms were dissected, opened by freeze-cracking (17), and then stained with MID15B4, a specific anti-ceramide antibody [see the supporting online material (SOM)]. Mitochondria were localized with an antibody to the mitochondrial marker protein OxPhos Complex IV subunit I (COX-IV) or by Rhodamine B staining (18). COX-IV staining (green) before and after irradiation displayed a prominent perinuclear distribution reminiscent of mitochondrial topography in some mammalian cell systems (Fig. 3A) (19, 20). Ceramide staining (red) displayed a similar profile and at baseline was faint,

increasing 2.4-fold at 24 hours post-irradiation (Fig. 3A and fig. S3) (*P* < 0.0001). Merging the two signals (red and green) revealed that ceramide accumulation was distinctively mitochondrial (yellow). Radiation-induced ceramide accumulation was abrogated in *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)* animals (Fig. 3A). Similarly, ceramide increase was abrogated in irradiated *lagr-1(gk327);hyl-1(ok976)* as compared with WT animals (1.2- versus 3.9-fold of unirradiated controls, respectively). These results define ionizing radiation-induced ceramide accumulation in the *C. elegans* germ line as mitochondrial in origin, mediated via the classic ceramide biosynthetic pathway.

We examined whether mitochondrial ceramide accumulation was required for CED-4 redistribution to nuclear membranes. In nonapoptotic somatic cells, CED-4 is sequestered to mitochondria by binding CED-9. When displaced by EGL-1, CED-4 targets nuclear membranes and activates caspase CED-3, necessary for the effector phase of apoptosis (21–24). For these studies, *abl-1(ok171)* and *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)* animals were exposed to 120 Gy, and germ cells were released from gonads and stained with antibodies against *C. elegans* CED-4 and Ce-lamin, a nuclear membrane marker. CED-4 and Ce-lamin colocalization by confocal microscopy (yellow merged signal) served as readout for nuclear CED-4 redistribution. After irradiation nuclear CED-4 staining intensity increased 4.3-fold from 0.59 ± 0.03 to 2.53 ± 0.42 arbitrary fluorescence units in *abl-1(ok171)* (Fig. 3, B and C) (*P* < 0.001). Consistent with reduced germ cell apoptosis (Fig. 2A), nuclear CED-4 staining is significantly reduced in *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)* (Fig. 3, B and C) [*P* <

0.001 versus *abl-1(ok171)*]. Specifically, baseline CED-4 intensity at the nuclear membrane is lower in *lagr-1(gk327);hyl-1(ok976);abl-1(ok171)* than in *abl-1(ok171)*, increasing post-irradiation only to the control level of unirradiated *abl-1(ok171)* worms (Fig. 3C), an effect probably of biologic relevance as the biophysical effects of ceramide on membrane structure are concentration-dependent (1, 3).

We also used *opls219* worms, a strain expressing a CED-4::GFP fusion protein (where GFP is green fluorescent protein), which permits in vivo detection of CED-4 trafficking (25). *opls219* worms were cultured on plates containing Rhodamine B to stain mitochondria (red). Merged images detect mitochondrial CED-4 as a yellow signal (red and green overlay), whereas nonmitochondrial CED-4 appears green. Although a low-intensity green CED-4 signal was detected in nuclear membranes of unirradiated germ cells, the large majority of CED-4 was present in mitochondria before irradiation. At 36 hours postirradiation, the CED-4 signal was markedly reduced in mitochondria, relocalizing primarily to nuclear membranes as bright green platform-like structures (arrows in lower left panel in bottom of Fig. 3D). In eight worms, overall reduction in CED-4 mitochondrial colocalization upon irradiation was ~50% (*P* < 0.0001), abrogated in *lagr-1(gk327);opls219* (fig. S4). Consistent with the anti-CED-4 antibody staining (Fig. 3B), the loss of mitochondrial CED-4 signal in *opls219* was accompanied by a twofold increase in nuclear CED-4 signal, blocked entirely in *lagr-1(gk327);opls219* (to 0.9 ± 0.1 fold of control). These results indicate that mitochondrial ceramide contributes substantively to CED-4 displacement from mitochondrial membranes during radiation-induced germ cell apoptosis.

Our data indicate that the ceramide synthetic pathway is required for radiation-induced apoptosis of *C. elegans* germ cells. The most parsimonious molecular ordering suggests that CS (as well as its enzymatic product ceramide) functions on a pathway that is parallel to the CEP-1/p53–EGL-1 system. The coordinated function of these two pathways occurs at the mitochondrial commitment step of the apoptotic process. We hypothesize that ceramide may reorganize the mitochondrial outer membrane, yielding a permissive microenvironment for EGL-1–mediated displacement of CED-4, the trigger for the effector stage of the apoptotic process.

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Lacking Control Increases Illusory Pattern Perception

Jennifer A. Whitson^{1*} and Adam D. Galinsky²

We present six experiments that tested whether lacking control increases illusory pattern perception, which we define as the identification of a coherent and meaningful interrelationship among a set of random or unrelated stimuli. Participants who lacked control were more likely to perceive a variety of illusory patterns, including seeing images in noise, forming illusory correlations in stock market information, perceiving conspiracies, and developing superstitions. Additionally, we demonstrated that increased pattern perception has a motivational basis by measuring the need for structure directly and showing that the causal link between lack of control and illusory pattern perception is reduced by affirming the self. Although these many disparate forms of pattern perception are typically discussed as separate phenomena, the current results suggest that there is a common motive underlying them.

The desire to combat uncertainty and maintain control has long been considered a primary and fundamental motivating force in human life (1–3) and one of the most important variables governing psychological well-being and physical health (4–6). For example, when individuals can control, or even just perceive that they can control, the duration of painful shocks, they show lower arousal (7); similarly, learning details about a painful medical procedure can reduce anxiety and even lead to shorter recovery time (8). In contrast, lacking control is an unsettling and aversive state, activating the amygdala, which indicates a fear response (9). It is not surprising, then, that individuals actively try to reestablish control when it disappears or is taken away (10).

We propose that when individuals are unable to gain a sense of control objectively, they will try to gain it perceptually. Faced with a lack of control, people will turn to pattern perception, the identification of a coherent and meaningful interrelationship among a set of stimuli. Through pattern perception, individuals can make sense of events and develop predictions for the future (11–13). For instance, spontaneous causal attributions (identifying a cause-and-effect pattern in a sequence of events) are best predicted by unexpected events rather than negative ones, sug-

gesting that a major determinant of sense-making behavior is whether an individual lacks control (14, 15). Indeed, researchers have designated “desire for control as a motivational force behind the attribution process” (16).

Related to our theoretical framework, research has found that current needs can shape and even bias perceptual processes. For example, children of lower economic status overestimate the size of coins as compared with the wealthy (17), and hungry individuals are more likely to see food in ambiguous images (18). This research has established that specific needs alter the perception of stimuli directly relevant to those needs. The current research explores a much broader phenomenon: whether lacking control creates a tendency to see patterns more generally.

Because these feelings of control are so essential for psychological well-being, our main hypothesis is that lacking control will lead to illusory pattern perception, which we define as the identification of a coherent and meaningful interrelationship among a set of random or unrelated stimuli (such as the tendency to perceive false correlations, see imaginary figures, form superstitious rituals, and embrace conspiracy beliefs, among others). In fact, a high desire for control has been associated with distortions of objective reality (19), and studies have found that lacking control produces attributional biases to restore feelings of control (16). We suggest that a lack of control provokes seeing and seeking patterns because pattern perception is a compensatory mechanism designed to restore feelings of

control. Conspiracy beliefs are one example of how this process might work: They have been described as giving “causes and motives to events that are more rationally seen as accidents . . . [in order to] bring the disturbing vagaries of reality under . . . control” (20).

There are a number of findings that circumstantially support our specific hypothesis that lacking control leads to illusory pattern perception. Such disparate groups as preindustrial fisherman, skydivers, baseball players, and first-year MBA students have all displayed a connection between a lack of control and perceiving illusory patterns in one’s environment. Tribes of the Trobriand islands who fish in the deep sea, where sudden storms and unmapped waters are constant concerns, have far more rituals associated with fishing than do those who fish in shallow waters (21). Parachute jumpers are more likely to see a nonexistent figure in a picture of visual noise just before a jump than at an earlier time (22). Baseball players create rituals in direct proportion to the capriciousness of their position (for example, pitchers are particularly likely to see connections between the shirt they wear and success) (23). First-year MBA students are more susceptible to conspiratorial perceptions than are second-year students (24). Even on a national level, when times are economically uncertain, superstitions increase (25). These anthropological observations and correlational studies all provide suggestive but nonconclusive evidence that lacking control leads to the perception of illusory patterns.

To test whether a lack of control directly increases illusory pattern perception, we conducted six experiments that used multiple methods to induce a lack of control and measured illusory pattern perception by using a variety of stimuli. Our definition of pattern perception, both illusory and accurate, encompasses a range of phenomena that were previously studied independently. Despite their surface disparities, seeing figures in noise, forming illusory correlations, creating superstitious rituals, and perceiving conspiracy beliefs all represent the same underlying process: the identification of a coherent and meaningful interrelationship among a set of random or unrelated stimuli.

In the first experiment, we sought to establish that lacking control creates a need to see patterns. We manipulated lack of control by using a concept-identification paradigm specifically created to re-

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In the first experiment, we sought to establish that lacking control creates a need to see patterns. We manipulated lack of control by using a concept-identification paradigm specifically created to re-

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duce a sense of control (26–28). Consistent with this paradigm, participants in the lack-of-control condition received random performance feedback that was not contingent on their responses. Baseline participants identified concepts without feedback. We measured the individuals' need to perceive patterns using the Personal Need for Structure Scale, which assesses the need to "structure the world into a simplified, more manageable form" (29).

Participants lacking control in the concept identification task [Personal Need for Structure Scale mean (M) = 44.9, SD = 6.3] showed an increase in their personal need for structure as compared with those in the baseline condition [M = 38.2, SD = 10.7; Student's t test, $t(27)$ = 2.11, P = 0.045]. Having established that a lack of control increases the need to see structure and patterns, we next tested whether it increases the perception of illusory patterns.

Experiment 2 manipulated lack of control using the same concept-identification task from the previous experiment and then measured visual pattern perception with a modified version of the snowy pictures task (30). Twelve of the 24 pictures were from the original task and contained a grainy embedded image that was difficult but possible to perceive. The other 12 pictures were manipulated using software to eliminate any traces of the embedded image. Participants were asked to identify whether there was an image or not and, if so, what it was.

In the 12 pictures in which an image did exist, almost all participants perceived an image [overall M = 11.4, SD = 1.1; $t(34)$ = 0.57, P = 0.57]. However, in pictures that lacked an image, participants in the lack-of-control condition (M = 5.16, SD = 3.5) saw marginally more images than did participants in the baseline condition [M = 3.47, SD = 2.0; $t(34)$ = 1.76, P = 0.09]. Participants who lacked control were more likely to perceive images where none existed.

In the third experiment, we manipulated lack of control by having participants vividly recall an experience in which they lacked or had full control over a situation. They next responded to three scenarios that tapped into superstitious beliefs; each scenario described an outcome that was preceded by a potentially unrelated behavior (such as knocking on wood before an important meeting and then getting one's idea approved). The participants were asked whether they thought the behavior was related to the outcome and how worried they were about performing that behavior in the future. Those who recalled an experience in which they lacked control (M = 4.92, SD = 2.5) perceived a greater connection between the two events than did those who recalled having control [M = 3.5, SD = 1.8; $t(39)$ = 2.03, P = 0.05] and were more worried about performing similar behaviors in the future [M = 5.95, SD = 2.6 versus M = 4.12, SD = 2.3; $t(39)$ = 2.42, P = 0.02]. This experiment establishes that the mere recollection of an experience involving a lack of control increases superstitious perceptions.

To demonstrate that threat, independent of lacking control, is not the driving force behind illusory pattern perception, we conducted a fourth

experiment in which all participants recalled a situation "in which something threatening happened," but we manipulated whether they had or lacked control in the situation. Our dependent measures were visual pattern perception and an additional type of pattern perception, conspiracy perceptions. Because the altered snowy pictures in the second experiment may have contained trace images of the original image, we measured illusory pattern perception by creating 10 pictures that each contained a random scattering of black dots on a white background, resembling noise on a television set. We also measured conspiracy perceptions to rule out the possibility that the above findings are simply the result of increased heuristic processing: The perception of conspiracies is not a simplifying process but a complex integration of data that is cognitively effortful. In each of our conspiracy scenarios, the situation was ambiguous as to whether there was a coordinated effort among a set of individuals to produce an outcome; participants were asked how connected they thought the individuals' behavior was to the outcome.

Even though all participants recalled a threatening situation, our manipulation of control still had the predicted effects. Lacking control (M = 2.92, SD = 2.5) led participants to see more images in the visual static than did those in the control condition [M = 0.92, SD = 2.0; $t(23)$ = 2.18, P = 0.04]. In addition, participants who lacked control (M = 4.42, SD = 1.1) perceived a significantly greater likelihood of conspiracy than did control participants [M = 3.50, SD = 1.0; $t(23)$ = 2.19, P = 0.04]. Two raters that were blind to the conditions and hypotheses coded the situations the participants recalled (31), and we found no differences between conditions in the level of threat expressed [$t(23)$ = 1.1, P = 0.30]. Lack of control, and not threat alone, appears to produce illusory pattern perception.

We next tested the relationship between lack of control and illusory pattern perception in a financial domain, the stock market, by using a standard illusory correlation paradigm, which assesses whether two uncorrelated sets of information are perceived as related (that is, whether a pattern is seen that does not exist). We manipulated control by describing the stock market environment as either volatile or stable. In the volatile condition, participants read that the stock market was volatile and uncertain and were given a headline that said, "Rough Seas Ahead for Investors." In the stable condition, participants read that the stock market was stable and predictable and were given a headline that said, "Smooth Sailing Ahead for Investors."

Participants then read 24 statements about the financial performance of two companies. Each statement contained either positive or negative performance information. The ratio of positive to negative statements was constant across the companies, but the amount of information seen about each company was different: company A had 16 positive and 8 negative statements, whereas company B had 8 positive and 4 negative statements. Participants were then given a choice to invest in either company A or B and were asked

to report the number of negative statements that they remembered referring to companies A and B.

The presentation of the financial performance statements was designed to be consistent with the typical illusory correlation paradigm. Using this paradigm, researchers typically find that participants perceive a correlation between the infrequent behaviors and the group with less information, overestimating the number of times the two rare events occurred together, even though the information they are given distributes the positive and negative behaviors in equal proportion between the two groups. Because people typically over-associate the infrequent information with the infrequent group (that is, they perceive a correlation), we predicted that market volatility would increase the association between negative information and company B.

Market volatility affected investment decisions: Only 25% chose to invest in company B during a volatile market as compared with 58% during a stable market [χ^2 test, $\chi^2(1)$ = 4.94, P = 0.03]. The volatile market condition also led to a stronger association between the negative information and company B: Participants overestimated the frequency of negative statements about company B in the volatile market (M = 5.0, SD = 1.5) but accurately perceived the amount of negative statements in the stable market [M = 3.9, SD = 1.7; $t(42)$ = 2.40, P = 0.02]. The degree that participants overestimated the frequency of negative statements about company B mediated the effect of market volatility on investment decisions: when market volatility and frequency of negative statements simultaneously predicted investment decisions, market volatility was no longer a significant predictor (P = .169), but frequency of negative statements did predict investment decision (P = .009; Sobel test, z = 1.78, P = 0.07). These analyses demonstrate that participants formed illusory correlations: participants overestimated the infrequent type of information (negative) with the infrequently presented group (company B), and this illusory connection between negative statements and company B drove their investment decisions.

If the perception of illusory patterns is a compensatory mechanism induced by the distressing experience of lacking control, then an intervention that ameliorates this aversive state should break the link between lacking control and illusory pattern perception. Numerous studies have shown that letting individuals contemplate and affirm their important values is an effective method for reducing a variety of psychologically aversive states, including learned helplessness, dissonance, attributional biases, and persistent rumination (32–34). Because (i) self-affirmation reduces reactivity to threats and eliminates compensatory responses and (ii) lacking control is such a psychologically aversive and distressing state, we predicted that self-affirmation would reduce the tendency for individuals who lack control to perceive illusory patterns.

To test whether self-affirmations would reduce illusory pattern perception, we used the recall task from experiment 3 to manipulate lack of control and measured illusory pattern perception by using experiment 2's snowy pictures task and

conspiracy scenarios similar to those used in experiment 4 (35). The experiment had three conditions: lack of control without self-affirmation, lack of control against self-affirmation, and baseline (no recall task). After completing the recall task but before reading and responding to the snowy pictures and the conspiracy scenarios, participants completed a standard self-affirmation procedure (34). They were asked to complete a scale focused on a value they had indicated at the beginning of the experiment to be either most important (self-affirmation) or least important (no self-affirmation) to them.

To analyze the data, we conducted contrast tests that compared the lack of control/no self-affirmation condition with the self-affirmation and baseline conditions. Similar to effects found in Experiment 2 on the snowy pictures task, participants who lacked control and received no opportunity for self-affirmation ($M = 5.44$, $SD = 3.6$) saw more patterns when none existed than did those in the self-affirmation condition ($M = 3.24$, $SD = 2.6$) and the baseline condition [$M = 3.47$, $SD = 3.3$; $t(47) = 2.21$, $P = 0.03$]. Additionally, participants who lacked control without self-affirmation ($M = 4.76$, $SD = 0.87$) perceived a significantly greater likelihood of conspiracy than did those in the self-affirmation ($M = 4.18$, $SD = 0.83$) and baseline conditions [$M = 4.20$, $SD = 1.10$; $t(47) = 2.08$, $P = 0.04$] (36). Lacking control without an opportunity to self-affirm led participants to see images that did not exist and to perceive conspiracies. However, participants who experienced a lack of control but then had the opportunity to self-affirm resembled participants in the baseline condition. This experiment shows that a lack of control creates a need to perceive patterns in one's environment, even when the patterns perceived are illusory.

These six experiments demonstrate that lacking control motivates pattern perception: Experiencing a loss of control led participants to desire more structure and to perceive illusory patterns. The need to be and feel in control is so strong that individuals will produce a pattern from noise to return the world to a predictable state.

We acknowledge that the studies did not involve large sample sizes, but given the large effects required to achieve significance, combined with the consistent pattern across the studies, we feel our hypothesis has been effectively supported.

The focus of the current research was on illusory pattern perception. Because nearly all participants correctly identified an image in the snowy pictures when one was present, we were not able to address whether a lack of control also increases accuracy in detecting real patterns, ones that do in fact exist. If so, a lack of control would seem to increase positive identifications, both false and accurate. Future research should employ tasks with greater variance in participants' ability to detect actual patterns to test this idea more systematically. It should also explore whether increased pattern perception exists not just in

the identification of more patterns but also in shorter latencies to perceive them.

Illusory pattern perception may not be entirely maladaptive. If pattern perception helps an individual regain a sense of control, the very act of perceiving a pattern, even an illusory one, may be enough to soothe this aversive state, decreasing depression and learned helplessness, creating confidence, and increasing agency. Although it is certainly preferable to accurately perceive one's environment, illusory pattern perception itself may be at times adaptive by allowing an individual to psychologically engage with rather than withdraw from their environment.

The current research offers insights into how illusory pattern perception driven by a lack of control may be overcome. When individuals were made to feel psychologically secure after lacking control, they were less prone to the perception of illusory patterns. Indeed, the beneficial effects of this sense of security are tapped into by psychotherapy, which attempts to give clients a sense of control over their lives to reduce the obsessive-compulsive tendencies or sinister attributions engendered by seeing too much meaning and intentions in others' innocuous behaviors. Collectively, the six experiments highlight the importance of having versus lacking control and hold promise for preventing futile pursuits born of the perception of illusory patterns.

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36. Focused contrasts are the preferred analysis with three levels of a single experimental factor when researchers have a hypothesis that one condition will be different from the other two conditions (37). For the interested reader, we report the omnibus ANOVA testing the overall variance among the conditions: for snowy pictures, $F_{1,47} = 2.49$, $P = .09$; for conspiracy, $F_{1,47} = 2.17$, $P = .13$.
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Supporting Online Material

www.sciencemag.org/cgi/content/full/322/5898/115/DC1
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The Department of Biology at the University of Virginia invites applications for a tenure-track Assistant Professor appointment beginning August 25, 2009. Applications are invited from outstanding individuals studying fundamental aspects of developmental biology at the molecular, cellular, evolutionary, organismal, or systems level.

The Department of Biology at the University of Virginia ([website: http://www.virginia.edu/biology/](http://www.virginia.edu/biology/)) spans a broad range of interests including cell and developmental biology, morphogenesis, neurobiology, biological timing, and evolutionary biology. The successful candidate is expected to establish a vigorous, independent, and externally funded research program, interact with one or more existing departmental strengths, and contribute to undergraduate and graduate instruction and training in developmental biology. A generous startup package and excellent research facilities are available.

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The successful candidate will have the opportunity to participate in these programs.

To apply, please submit a candidate profile, cover letter, curriculum vitae, a statement of current and future research interests, a statement of teaching experience and goals, and the contact information for three references through Jobs at UVA ([website: https://jobs.virginia.edu](http://jobs.virginia.edu)); posting number 0602723.

Inquiries about the position may be e-mailed to e-mail: biosearch@virginia.edu.

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The University of California, Santa Barbara, Department of Anthropology, Integrative Anthropological Sciences (IAS), seeks a Scientific Ecological Anthropologist for tenure-track position at **ASSISTANT PROFESSOR** level. Possible specializations include human ecology, behavioral or evolutionary ecology, cooperation and common pool resources, indigenous resource management, dual inheritance theory, ethnobiology, subsistence economics, nutritional ecology, reproductive ecology, life history theory, ecological genetics, demography, and epidemiology. Applications should be postmarked by November 14, 2008. For more details see [website: http://www.anth.ucsb.edu](http://www.anth.ucsb.edu).

The Biology Department at Missouri State University anticipates an August 2009 opening for an **ASSISTANT PROFESSOR** with a specialty in genetics. For a full position description and to apply online see [website: http://www.missouristate.edu/academicopenings](http://www.missouristate.edu/academicopenings). Letter of application, curriculum vitae, statement of teaching experience and interests, research plan, and names and addresses for three to five references can be uploaded electronically. For additional information contact: **John Heywood, Department of Biology, Missouri State University, Springfield, MO 65897**. Employment will require a criminal background check at University expense. An Equal Opportunity/Affirmative Action Institution.

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Cell Biologist. Areas of interest include, but are not limited to, neurobiology, lipids and signal transduction, RNA biology, and organelle biogenesis and function.

Developmental Biologist. We are particularly interested in individuals taking a systems approach to the analysis of developmental problems, including but not limited to epigenetics and developmental plasticity, gastrulation/neurulation in a vertebrate model system, and plant development.

Microbiologist. Areas of interest include, but are not limited to, bacteriology, virology, immunology, host-pathogen interactions, and infectious disease processes.

Wayne State University is a large, comprehensive, nationally ranked research institution that offers state-of-the-art research facilities and generous start-up packages. Applicants must have a Ph.D. degree, postdoctoral experience and an outstanding record of research achievement. Successful applicants are expected to establish and maintain vigorous, externally funded research programs and to participate in graduate and undergraduate education. All positions will officially be posted on-line at jobs.wayne.edu by mid October. Only those application materials that are submitted to this site will be considered. In addition to an online application that includes cover letter and curriculum vitae, applicants must submit a 2-page statement of their research plans and have three letters of reference sent to: **Chair, Faculty Search Committee, Department of Biological Sciences, Wayne State University, 5047 Gullen Mall, Detroit, MI 48202.** Review of applications will begin immediately and the search will remain open until the positions have been filled. Applications will be considered only when all materials have been received.

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317 BIOLOGY BUILDING

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Candidates are expected to develop an internationally recognized program of scholarly research and to excel in teaching at undergraduate and graduate levels. The positions will remain open until filled but preference will be given to applicants who have submitted all requested materials prior to **October 31, 2008**. Applicants should send the following (in PDF format): a curriculum vitae, copies of up to three reprints, a one- to two-page summary of research plans, and arrange to have three letters of reference (also in PDF format) sent directly to: lsichembio@umich.edu.

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Life Sciences Institute



University of Pittsburgh Center for Vaccine Research

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The CVR is housed in the new, state-of-the-art, 300,000 sq. ft. Biomedical Research Tower-3 (BST3), which is located on the main campus of the University of Pittsburgh—one of the nation's leading research institutions. The CVR is composed of two components—the Vaccine Research Lab (VRL) and the Regional Biocontainment Lab (RBL), offering comprehensive BSL2 and BSL3 laboratory and animal facilities.

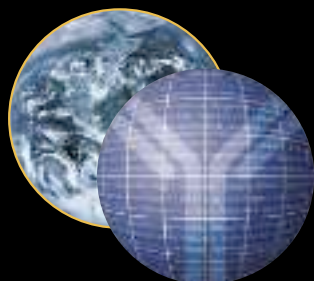
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Review of applications will begin immediately and continue until all positions are filled. Interested individuals should submit a letter of application, curriculum vitae, a statement of research accomplishments and goals, and the names, mailing addresses, e-mail addresses and telephone numbers of three professional references. Electronic applications are preferred and should be sent to CVRInfo@pitt.edu (subject line: CVR Faculty Search). Applications submitted by mail should be sent to: **CVR Search Committee, c/o Donald S. Burke, MD, Director, Center for Vaccine Research, University of Pittsburgh, 9014 Biomedical Science Tower 3, 3501 Fifth Avenue, Pittsburgh, PA 15261.**

Inquiries: e-mail CVRInfo@pitt.edu or telephone 412-624-4480.

For more information about the CVR, please visit our web site at <http://www.cvr.pitt.edu>

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To apply for the program, send your CV-Bib, an outline of your proposed research program (no more than two pages) and a letter of support from the accepting NIAID lab chief by **October 31, 2008** via e-mail to Ms. Wanda Jackson at NIAID.DIR.Search@niaid.nih.gov. In addition, three letters of recommendation must be sent to Chair, NIAID Clinical Transition Program Search Committee, c/o Ms. Wanda Jackson at NIAID.DIR.Search@niaid.nih.gov or 10 Center Drive MSC 1356, Building 10, Rm. 4A-26, Bethesda, Maryland 20892-1356. E-mail is preferred. Please note search #024 when sending materials.

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4. **Ecologist or Veterinarian** to run field programs surveying wildlife in Bangladesh and India for our new program on pathogen discovery.
5. **Avian Influenza Ecologist/Modeler** to study the dynamics and spread of H5N1 avian influenza in China and globally.

Two Staff Positions at CCM HQ

1. **Program Coordinator**, who will be a recent graduate (bachelor's or master's level) in the biological sciences. Responsibilities include grants management, operational logistics for research programs, and international meeting coordination. International travel is required.
2. **Program Assistant**, who will be a bachelor's degree level candidate, to manage office functions in New York. Candidate must have excellent organizational and communication skills.

Further details can be found at www.conservationmedicine.org. All positions are based in New York and require some international travel. Review of applications will begin **October 15, 2008** and continue until positions are filled. Candidates should submit a full *Curriculum Vitae*, names and email addresses of 2 academic referees, and a cover letter by email to jobs@conservationmedicine.org stating clearly the position of interest and career goals.

FACULTY POSITIONS DEPARTMENT OF PHYSICS THE UNIVERSITY OF TEXAS AT AUSTIN

The Department of Physics at The University of Texas at Austin is seeking candidates for tenure-track assistant professorship positions in physics starting in September 2009. In special cases, appointments at more senior levels will be considered. Successful candidates will assume full teaching responsibilities for undergraduate and graduate courses in the Department of Physics and are also expected to conduct vigorous research programs. Research areas of current highest priority for the Department are Biophysics Experiment and Fundamental Theory/Cosmology. Outstanding candidates in other areas of departmental focus will also be considered. Excellent English language communication skills are required. Applicants must have a Ph.D. (or equivalent) and a demonstrated potential for excellence in teaching and research.

Interested applicants should send a curriculum vitae, a list of publications, a statement of research interests, a research plan, and should arrange for at least five letters of recommendation to be sent to: **Prof. John T. Markert, Chair, Department of Physics, The University of Texas at Austin, 1 University Station C1600, Austin, TX 78712-0264**. Review of completed applications will begin in **October, 2008**.

The University of Texas at Austin is an Equal Opportunity/Affirmative Action Employer.



TENURE-TRACK FACULTY POSITION DEPARTMENT OF BIOCHEMISTRY

The Department of Biochemistry welcomes candidates for a tenure-track position at the Assistant or Associate Professor level. We seek investigators using **structural biological approaches**, particularly **X-ray crystallography**, to develop a competitive, independent research program that complements existing institutional strengths in cancer and cardiovascular and infectious diseases. Applicants must have a doctoral degree (Ph.D. and/or M.D.), over two years of postdoctoral training, a strong publication record, and the potential to obtain extramural funding. Competitive salary support, start-up funds, and new laboratory space will be provided.

The Medical College of Wisconsin (www.mcw.edu) is the largest private research institution in Wisconsin, conducting over \$130 million annually in funded research, and over the past few years has been among the fastest growing research-oriented medical schools in the United States for NIH funding. The Department of Biochemistry is home to state-of-the-art X-ray and NMR facilities. The College is conveniently located 90 minutes from the Advanced Photon Source at Argonne National Laboratory. The Medical College is also home to nine federally designated Centers of Biomedical Research, including a National Biomedical Electron Paramagnetic Resonance Center. Shared facilities are available for proteomics, imaging, molecular biology, and mouse genetics. The College is located in suburban Milwaukee and is 8 miles west of Lake Michigan with easy access to surrounding communities, lakes, and parks. For more information visit the departmental website at www.mcw.edu/biochemistry.

Applications should include a cover letter, curriculum vitae, statement of research interests, copies of key publications, and three reference letters. Review of applicants will begin on **October 31, 2008**. For full consideration applications should be received by **November 30, 2008**. Send application materials and reference letters electronically in pdf format to pmalkowski@mcw.edu or by regular mail to: **Dr. Jung-Ja Kim, Search Committee Chair, Department of Biochemistry, Medical College of Wisconsin, 8701 Watertown Plank Road, Milwaukee, WI 53226**.

EOE M/F/D/V
(www.mcw.edu/hr)

Faculty Position Molecular Biology Sloan-Kettering Institute

The Molecular Biology Program of the Sloan-Kettering Institute, Memorial Sloan-Kettering Cancer Center (www.ski.edu), has initiated a faculty search at the Assistant Member level (equivalent to Assistant Professor). We are interested in outstanding individuals who have demonstrated records of significant accomplishment and the potential to make noteworthy contributions to the biological sciences as independent investigators. Successful applicants will have research interests that move the Program into exciting new areas that complement and enhance our existing strengths in the areas of maintenance of genomic integrity, regulation of the cell cycle, and regulation of gene expression. Faculty will be eligible to hold appointments in the Gerstner Sloan-Kettering Graduate School of Biomedical Sciences, the Weill Cornell Graduate School of Medical Sciences, as well as the Tri-Institutional MD/PhD Training Program.

Candidates should e-mail their application in PDF format to: molbio@mskcc.org by **November 15, 2008**. The application should include a CV, description of past and proposed research (3-7 pp), and copies of three representative publications. Candidates should arrange to have three signed letters of reference sent in PDF format to: molbio@mskcc.org. The letters should arrive by **November 15, 2008** and should be addressed to **Dr. Kenneth Mariani, c/o Julie Kwan, Box 135, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, New York 10065**. Inquiries may be sent to Ms. Kwan at molbio@mskcc.org or to Dr. Kenneth Mariani, Chair, Molecular Biology Program at kmarians@sloankettering.edu. Memorial Sloan-Kettering Cancer Center is an Equal Opportunity Employer. Smoke-free environment.



Memorial Sloan-Kettering
Cancer Center
www.mskcc.org

EMBL



Australian Government

National Health and Medical Research Council

Applications are invited from suitably qualified scientists wishing to develop their research programme as a group leader at EMBL. In accordance with Australia's associate membership of EMBL, funding from NHMRC is available to support one research group located at one of the five EMBL sites in Europe for a maximum period of five years. The position will then be continued for a further four years at an Australian institution. To be eligible for NHMRC support applicants must be working in a field relevant to human health.

Group Leader

5 years in Europe and 4 years in Australia

EMBL Site: The group's location is dependent on the successful candidate's preferences and the proposed research programme. Options available include Heidelberg (Germany) and the EMBL Outstations in Hinxton (UK), Grenoble (France), Hamburg (Germany) and Monterotondo (Italy).

Australian Site: The group leader's location in Australia is dependent on the location of the Australian institution which satisfies Australia's National Health and Medical Research Council (NHMRC) and EMBL that the standard of the proposed programme of research is sufficient to compete for funding from Australian research funding agencies. As such, there are research institutions meeting this requirement in every Australian state or territory.

EMBL is an international research organisation offering a highly collaborative, uniquely international culture. It fosters top quality, interdisciplinary research by promoting a vibrant environment consisting of young independent research groups composed of outstanding graduate students and postdoctoral fellows. The scientific programme of EMBL emphasises experimental analysis at multiple levels of biological organisation, from the molecule to the organism, as well as computational biology, bioinformatics and systems biology. In addition to exciting colleagues, the laboratory provides excellent shared facilities for a variety of advanced experimental approaches. High-level expertise is also available in computational biology, diverse aspects of experimental molecular biology as well as physics, biophysics, chemical biology and instrument development.

The successful candidate will lead a research group for a period of five years at the selected EMBL site in Europe and will participate in the collegial culture of EMBL. Following the term in Europe, the candidate will continue as a group leader at an Australian institution. The successful applicant will need to select and finalise arrangements with an approved Australian institution prior to the commencement of placement in Europe. The candidate will also participate in a programme of linking activities with the Australian institution while in Europe.

Commencing date in Europe: from mid-2009

EMBL is an inclusive, equal opportunity employer offering attractive conditions and benefits appropriate to an international research organisation.

Further information about EMBL can be obtained at www.embl.org and on the position from:

- EMBL Director General, Iain Mattaj (dg-office@embl.org) or
- NHMRC Executive Director, Research Investment Branch, Elim Papadakis (elim.papadakis@nhmrc.gov.au).

To apply, please email a CV, including a summary of present and future research interests and three reference letters quoting ref. no. S/08/007 in the subject line, to:

application@embl.de

Closing date: 21 November 2008

www.embl.org



ASSISTANT PROFESSOR: The Biochemistry, Cellular and Molecular Biology (BCMB) Department at the University of Tennessee, Knoxville seeks to fill a tenure-track faculty position at the assistant professor level to begin August 1, 2009 in the following area:

COMPUTATIONAL MOLECULAR BIOPHYSICS

The research associated with the appointment will be performed in the Center for Molecular Biophysics at Oak Ridge National Laboratory (ORNL). There is particular interest in candidates with expertise in the physical modeling and simulation of the dynamics of biological systems, complementing neutron experiments. Particularly strong interactions are expected with research undertaken at the new Spallation Neutron Source and the National Leadership Supercomputing Centre, both at ORNL, and with the ORNL Life, Computational and Physical Sciences programs. The successful candidate will also benefit from interactions with strong research groups within UTK. The successful applicant will be expected to develop a first-class, externally funded research program, to provide state-of-the-art training for graduate students and postdoctoral researchers, and to contribute to the teaching mission of the BCMB department at both the undergraduate and graduate levels. Required qualifications include a Ph.D. and postdoctoral experience in relevant areas of computational molecular biophysics, evidence of significant scientific productivity, and a commitment to an integrated program of teaching and research. The university welcomes and honors people of all races, creeds, cultures, and sexual orientations, and values intellectual curiosity, pursuit of knowledge, and academic freedom and integrity.

Interested candidates should send a cover letter, a resume, a description of research experience and of the proposed research program, and arrange for three letters of reference to be sent to: **Jeremy C. Smith, Chair, Faculty Search Committee, BCMB Department, M407 WLS, University of Tennessee, Knoxville, TN 37996-0840.** This is an extended search and review of applications will begin on **October 1, 2008** and continue until the position is filled.

The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services. All qualified applicants will receive equal consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, age, physical or mental disability, or covered veteran status.

Assistant Professor

Stony Brook University's Department of Neurobiology and Behavior is continuing a major initiative in Neuroscience with recruitment of a tenure-track faculty member at the Assistant Professor level in 2009. Outstanding scientists in all fields of neuroscience will be considered, but those engaged in molecular approaches are especially encouraged to apply.

Required: Applicants must have a Ph.D. or equivalent degree, and postdoctoral experience. Successful candidates will join an active and diverse group of neuroscientists at Stony Brook University and its affiliated institutions, and will also participate in the Department's research mission and in undergraduate, graduate, and medical school teaching. Exceptional packages include state-funded salary and benefits, newly renovated lab space, and generous start-up funding. Review of applications starts immediately and will continue until the position is filled.

For full position description or to apply online visit www.stonybrook.edu/jobs (REF: F-4034-08-08-F) or send a C.V., a statement of research interests, and contact information for three references to:

Gary G. Matthews, Chair, Faculty Search Committee, Department of Neurobiology and Behavior, Life Sciences Building
Stony Brook University, SUNY
Stony Brook, NY 11794-5230

Equal Opportunity/Affirmative Action Employer



NC STATE UNIVERSITY

Governor Robert W. Scott Distinguished Professorship Department of Chemistry

The Department of Chemistry at North Carolina State University invites nominations and applications to fill the Governor Robert W. Scott Distinguished Professorship in chemistry. Preliminary inquiries are also encouraged. This position is one component of a major growth plan at the University with emphasis on interdisciplinary research related to life sciences and energy. The successful candidate must have a nationally and internationally recognized research program and be able to provide dynamic leadership in his or her area of research. All candidates are expected to have strong interest and ability in teaching at both the undergraduate and graduate levels. Formal requirements include a PhD in chemistry or in a related scientific field plus an established track record of accomplishments appropriate for appointment as a tenured full-professor in chemistry.

Candidates should submit an electronic copy of their curriculum vitae along with other material describing future directions of their research at: <http://jobs.ncsu.edu> under position number **07-48-0821**. Nominations and all inquiries should be sent to the Chemistry Department Chair **Morteza_Khaledi@ncsu.edu**. After a preliminary review, candidates will be contacted and asked to request letters of recommendation. However, if a candidate prefers, letters of recommendation may also be sent at the time of application and mailed to the **Governor Scott Search Committee Chair, Department of Chemistry, North Carolina State University, Raleigh, NC 27695-8204**. The review of applicants will begin on **November 1, 2008** and will continue until candidates are selected.

We welcome the opportunity to work with candidates to identify suitable employment opportunities for spouses or partners. AA/EOE. In addition, NC State welcomes all persons without regard to sexual orientation. Persons with disabilities requiring accommodations in the application and interview process please call (919) 515-3148.



Faculty Positions in Bacteriology and Tumor Virology

The Department of Molecular Virology and Microbiology at Baylor College of Medicine invites applications for two tenure/tenure-track faculty positions at the rank of Assistant or Associate Professor. Successful candidates will have demonstrated research productivity and will be expected to maintain an independent and innovative, funded research program and to participate in graduate training. This is an opportunity to join a strong, interactive department at Baylor College of Medicine in the rich scientific setting of the renowned Texas Medical Center. Current research interests of our departmental faculty focus on viral and bacterial gene expression, microbial pathogenesis, viral oncology, RNA and DNA viruses of human diseases, the human microbiome, vaccine development and evaluation, and microbial genomics and proteomics. Outstanding core facilities are available, including BSL-2 and new BSL-3/3E containment facilities for handling infectious agents and infected small animals. Multidisciplinary research centers, including the Dan L. Duncan Cancer Center and the Center for AIDS Research, facilitate collaborations. Candidates in the following areas are invited to apply:

- **Bacterial Pathogenesis** — Applicants with an interest in emerging infectious disease or biodefense bacterial pathogens and expertise in host-pathogen interactions or host responses to infection are particularly encouraged to apply. Email: BCM-MVM-facultypos4@bcm.edu.
- **Tumor Virology** — Applicants with an interest in viruses and cancer are sought. Applicants with expertise in HIV-associated malignancy research are particularly encouraged to apply. Email: BCM-MVM-facultypos5@bcm.edu.

Applicants should submit a curriculum vitae, a statement of research experience, a summary of future plans, and names of three references by **November 1, 2008** to: **Dr. Janet S. Butel, Faculty Recruitment Committee, Department of Molecular Virology and Microbiology, Mail Stop: BCM385, Baylor College of Medicine, Houston, TX 77030**. E-submission preferred using the email address listed for each position.

Baylor College of Medicine is an Equal Opportunity, Affirmative Action and Equal Access Employer.

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BD, a leading global medical technology company with operations in over 50 countries, is instrumental in combatting some of the world's most pressing diseases.

BD Biosciences, a segment of BD, is one of the largest businesses supporting the Life Sciences today, focused on bringing innovative tools, systems, and solutions to researchers and clinicians. The BD Biosciences European Headquarters, located in Erembodegem near Brussels, Belgium at the heart of Europe, regroup essential European functions such as European Marketing, Scientific Support, and a Flow Cytometry Training and Education Center.

Anne-Louise

Anne-Louise
RA/QA Specialist



We are currently looking for:

European Application Specialist – Bioimaging

As a European Application Specialist – Bioimaging, you will be providing application and software support to BD Biosciences' current and potential customers in the bioimaging area across Europe. In this role, you will be working closely with our Application Consultants and Sales Specialists to organize and provide instrument- and software related trainings on the BD Pathway™ bioimaging platform. You will also actively participate in developing a European Bioimaging Training Center at the Erembodegem site.

European Flow Cytometry Instrument Trainer

As a European Flow Cytometry Instrument Trainer, you will be responsible for providing training on high-end flow cytometry (cell sorting) instrumentation to both external and internal customers. In this role, you will be designing and conducting appropriate training programs at the European level, as well as providing assistance to the countries in the development of local trainings.

Scientific Support Specialist(s) – German language

As a European Scientific Support Specialist – Flow Cytometry, you will be part of a multicultural team where you will use your scientific knowledge to help scientists solve complex problems all over Europe, Middle East, and Africa. In this role you will provide product support to customers via phone and email and use the product knowledge you gain at BD Biosciences to actively contribute to education programs. You will also participate in building and maintaining a European contact database and provide technical content for our Expert Solution Database.

Key Account Manager – Bioimaging

As a European Key Account Manager – Bioimaging, you will be responsible for direct sales of BD Pathway Bioimager High Content Imaging instruments and their associated reagents in a European sales territory that includes several countries. The sales territory will be centred on Belgium and the Netherlands. You will be fully accountable for the territory sales objectives and the tactical environment required to achieve these objectives in collaboration with the local sales organizations. You will also work closely with the Bioimaging applications team based in Erembodegem and Basel, plus interact regularly with BD Bioimaging, Rockville, USA.



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For further information, please log on to www.bdbeurope.com and click on "Careers". To apply, please send your resume and motivational letter to HR_BDB@europe.bd.com

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DEAN, FACULTY OF ARTS & SCIENCES

Washington University in St. Louis seeks nominations and applications for the position of Dean of the Faculty of Arts & Sciences.

Washington University ranks among premier universities and is nationally and internationally acclaimed for its excellence in research, teaching, and service to society. Arts & Sciences is the intellectual hub of teaching and scholarship at Washington University, incorporating more than 45 departments, programs, and centers, 40 buildings, approximately 370 tenured and tenure-track faculty, and more than 5,000 students.

The Dean oversees academic and financial planning, departmental budgets, faculty salaries, faculty appointments, tenure decisions, and administration of the three component parts of the Faculty of Arts & Sciences: The College, The Graduate School, and University College. The Dean will manage an estimated budget for 2008-09 of more than \$230 million, including \$40-50 million in sponsored research.

The successful candidate will have a record of exceptional scholarship and teaching, as well as substantial administrative experience in a complex environment.

The review of credentials will begin immediately and will continue until the position is filled. For full consideration, please submit an application and accompanying materials before October 24, 2008. Nominations, inquiries and expressions of interest should be forwarded, in confidence and preferably electronically, to:



Shelly Weiss Storbeck, Managing Partner
Lori A. Cunningham, Associated Consultant
Storbeck/Pimentel & Associates, LLC
1400 North Providence Road, Suite 6000
Media, PA 19063
484/927-4069 (phone); 610/565-2939 (fax)
l.cunningham@storbeckpimentel.com (preferred)

For more information about Washington University in St. Louis, please consult its website, www.wustl.edu.

Washington University is an equal opportunity, affirmative action institution and encourages applications from, and nominations of, women and minority candidates.



The Argonne Named Postdoctoral Fellowship Program

The Director's Office initiated these special postdoctoral fellowships at Argonne, to be awarded internationally on an annual basis to outstanding doctoral scientists and engineers who are at early points in promising careers. The fellowships are named after scientific and technical luminaries who have been associated with Argonne and its predecessors, and the University of Chicago, since the 1940's.

Candidates for these fellowships must display superb ability in scientific or engineering research, and must show definite promise of becoming outstanding leaders in the research they pursue. Fellowships are awarded for a two-year term, with a possible renewal for a third year, and carry a stipend of \$76,000 per annum with an additional allocation of up to \$20,000 per annum for research support and travel.

Requirements for applying for an Argonne Named Postdoctoral Fellowship:

The following documents must be sent via e-mail to:
Named-Postdoc@anl.gov by
November 5, 2008. In the subject
line please include the name of
the candidate.

- Nomination memo (≤ 2 pages)
from ANL sponsor
- Research proposal (≤ 2 pages)
- Three letters of recommendation
from other than Argonne staff
- CV
- Graduate School and
Undergraduate Transcripts

The sponsor could be someone who is already familiar with your research work and accomplishments through previous collaborations of professional societies. If you have not yet identified an ANL sponsor, visit the detailed websites of the various Research Programs and Research Divisions at www.anl.gov

All correspondence should be addressed to Argonne Named Postdoctoral Fellowship Program. One application is sufficient to be considered for all named fellowships. For additional details, visit the Argonne web site at <http://www.dep.anl.gov/postdocs/> Argonne is an equal opportunity employer and we value diversity in our workforce.

Argonne is a U.S. Department of Energy
laboratory managed by UChicago
Argonne, LLC



**Westfalian
Wilhelms-University
Muenster, Germany**

The Medical Faculty of the Westfalian Wilhelms-University (Westfälische Wilhelms-Universität Muenster) invites applications for a tenured position as

University Professor (W3) for Neuroinflammation

The future holder of the position must fully represent the subject with regard to research and teaching. Clinical work will cover the field of neurodegenerative diseases with the exception of primary vascular dementia.

Candidates should have an excellent research record in the field of molecular mechanisms of inflammation related to neurodegeneration. As part of the position, an associate professorship, research and clinical (ambulatory, stationary) units will be generated. Candidates are expected to participate in collaborative research programs of the Medical Faculty, such as the "Interdisciplinary Clinical Research Centre" (IZKF), the "Collaborative Research Centres" (Sonderforschungsbereiche) SFB-TRR58, SFB-TRR3, SFB 293, SFB 492, SFB 629, and the Max-Planck-Institute of Molecular Biomedicine.

The position is tenure track, will be initially filled for 5 years, and converted to tenure based upon evaluation.

Prerequisite for the application are the license to practice medicine in Germany, an advanced medical qualification in the field of Neurology, including excellent scientific achievements as a junior professor, from a postdoctoral lecture qualification (habilitation), as a research scientist at a school of higher education/university, at non-university institutes, industry, administration, or other fields of society within or outside Germany.

Applications of women are specifically invited. In the case of equal qualifications, competence, and specific achievements, women will be considered on preferential terms within the framework of the legal possibilities.

Handicapped candidates with equivalent qualifications will be given preference.

According to a resolution by the Conference of the German Ministers for Science and Education of November 19, 1999, professors with clinical tasks will principally be employed on the basis of individually negotiable contracts (exceptions are possible, if applicants are already employed as life time professor of the salary group C3/W2). The clinical duties affiliated with this professorship will be laid down in a separate contract with the Universitätsklinikum.

Documents in support of an application, enclosing CV, scientific career, structured catalogue of publications, acquired third-party funds and reprints of the six most important publications should be submitted to the **Dean of the Faculty of Medicine, University of Muenster, Domagkstrasse 3, 48129 Muenster, Germany, by October 24th 2008**. References:
http://campus.uni-muenster.de/fileadmin/dekanat/Merkblatt_Berufungen_Ms.pdf



Faculty Positions

Bioscience and Bioengineering

Very attractive base salaries plus benefits

Make a major scientific discovery.

FACULTY POSITIONS IN BIOSCIENCES AND BIOENGINEERING

Professors, Associate Professors, Assistant Professors

The King Abdullah University of Science and Technology (KAUST) in Saudi Arabia will provide exceptional research facilities and all the benefits of an independent, merit-based institution with one of the world's largest university endowments. KAUST is an international graduate-level research university dedicated to inspiring a new age of scientific achievement and becoming a major contributor to global collaborative research. A university where education, administration and the recruitment of both staff and students are based on merit, without regard to race, religion or gender.

We are looking for recognized and promising academics with fundamental research interests in plant and microbial sciences. Your research may provide a base for new renewable technologies, bioenergy, sustainable agriculture and water conservation. Ideally you will use and develop one or more of these technical areas as part of your research:

- High throughput DNA sequencing for non-model plants and microbes
- High throughput analysis of mRNA and small regulatory RNAs
- Data management for genomic, proteomic and transcriptomic datasets
- Proteomic technologies applied to non-model plants and microbes
- Metabolic enzyme engineering for bulk feedstock and biotransformation
- Synthetic Biology tools for genetic systems assembly and analysis
- Microscopy-based approaches to cellular structure-function relationships
- Biophysical approaches for analysis and engineering of biological systems

The overall originality and promise of your work will be more important than your specialist area. You will enjoy opportunities to pursue innovative research, and take advantage of world-class facilities in genomics, proteomics,

imaging, structural biology, nanotechnology and computation. You will have a PhD in a biological science or related scientific or bioengineering discipline, along with evidence of the ability to pursue independent research, and an existing track record of publications in high-profile international journals. KAUST has a strong commitment to graduate education. You will have the opportunity to teach new graduate courses, and to lead teams of graduate students in Master's and PhD research.

KAUST opens in September 2009 at Thuwal on the Red Sea, 80 km north of Jeddah, and welcomes exceptional researchers, faculty and students from around the world. KAUST will offer very attractive base salaries and a wide range of benefits. To find out more about KAUST, go to www.kaust.edu.sa.

The University of Cambridge

As part of an Academic Excellence Alliance agreement, a committee from the Faculty of the School of Biological Sciences at the University of Cambridge will conduct the search, and nominate top applicants for roles at KAUST. KAUST will make all recruiting decisions, appointment offers, explanations of employment benefits and will be the faculty's employer.

For more information about the positions and the KAUST Academic Excellence Alliance with the University of Cambridge, see www.kaust-aea.cam.ac.uk.

To apply, send your CV, statements of research, an outline of potential teaching interests, and the contact details of at least three referees, by email to the Search Committee at info@kaust-aea.cam.ac.uk. Applications will be reviewed immediately.

Closing date for the first round of applications: October 31 2008. Applications will be accepted until July 2009, or until all ten positions have been filled.

Enquiries: info@kaust-aea.cam.ac.uk



**UNIVERSITY OF
CAMBRIDGE**



DEPARTMENT OF LABORATORY MEDICINE AND PATHOBIOLOGY ACADEMIC POSITION IN MICROBIAL PATHOGENESIS

The Department of Laboratory Medicine and Pathobiology, Faculty of Medicine, University of Toronto (www.lmp.facmed.utoronto.ca) is seeking applicants for one full-time tenure-stream faculty position at the rank of Assistant Professor available July 1, 2009 or at a mutually agreeable date. The position comes with a faculty salary commensurate with the applicant's experience and training. The successful applicant will be provided with a start-up package and space to establish a strong independent research program. We are particularly interested in dynamic individuals working in the areas of molecular and biochemical mechanisms of microbial disease, including virology.

Candidates must have a PhD, have completed significant postdoctoral training, and have an established track record of high quality innovative research. Exceptional candidates with established funded research programs and a rank of Associate or Full Professor may be considered as well. Teaching experience at the undergraduate and graduate level is an asset.

The successful candidate is expected to participate actively in graduate and undergraduate teaching programs, maintain a well-funded, independent research program and interact with other investigators on the University campus and at the major affiliated teaching hospitals. The University of Toronto is the fourth largest research entity in North America, with a large vibrant community of investigators carrying out excellent innovative research on the pathogenesis of microbial disease. The interaction of basic scientists with clinicians at the teaching hospitals and also at the Public Health Laboratories provides for outstanding opportunities for transformative research.

Applicants should submit a **hard copy of curriculum vitae, description of their research accomplishments, the focus of their planned research program and the names of three referees by December 23, 2008** or until the position is filled, to the **Chair, Academic Search Committee, Department of Laboratory Medicine and Pathobiology, Faculty of Medicine, University of Toronto, Room 110, 100 College Street, Toronto, Ontario, Canada, M5G 1L5**.

The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from visible minority group members, women, Aboriginal persons, persons with disabilities, members of sexual minority groups and others who may contribute to the further diversification of ideas. All qualified candidates are encouraged to apply. However, Canadians and permanent residents will be given priority.



Children's Hospital Boston



Harvard Medical School

Assistant Professor Division of Genetics Department of Medicine

Applications are invited for a tenure-track Assistant/Associate Professor position in the Division of Genetics in the Department of Medicine at Children's Hospital Boston. We are seeking an outstanding MD and/or MD/PhD scientist who will establish a vigorous basic science or translational research program with relevance to developmental biology and developmental disorders of childhood. The successful candidate will have modern laboratory space located in the newly opened Center for Life Science Building. Joint appointments in the Program in Genomics at Children's Hospital and the Broad Institute of MIT and Harvard may be available for appropriate applicants. The Division resides within a very strong research community in genetics, developmental biology and related disciplines throughout the Harvard Longwood Medical Area and the investigator will hold both Children's Hospital Boston and Harvard Medical School faculty appointments.

Candidate should submit a current CV, a 2- to 3-page description of research interests and future directions, and three to five reference letters. Materials should be sent via e-mail by **December 1, 2008** to: geneticssearch@childrens.harvard.edu. Please contact **Andrea McDonald** at **617-355-2449** with questions. We particularly encourage applications from women and minority candidates.

Equal Opportunity/Affirmative Action Employer.



The Life Sciences Institute and the University of Michigan Medical School invite applications for tenure track **ASSISTANT PROFESSOR** positions. We are seeking outstanding scholars, with Ph.D., M.D. or equivalent degrees and relevant postdoctoral experience, who show exceptional potential to develop an independent research program that will address fundamental issues in any aspect of stem cell biology. Applicants who have already established successful independent research programs will be considered for tenured **ASSOCIATE PROFESSOR** or **PROFESSOR** positions.

Applicants should send a curriculum vitae, copies of up to three reprints, a one- to two-page summary of research plans, and arrange to have three letters of reference sent directly by **October 31, 2008** to: **Stem Cell Search Committee, c/o Rebecca Fritts, Life Sciences Institute, University of Michigan, 210 Washtenaw Avenue, Ann Arbor, Michigan, 48109-2216**.

*The University of Michigan is an Affirmative Action/
Equal Opportunity Employer.*



The University of Texas at Austin

Eukaryotic Molecular Biology Positions The Institute for Cellular and Molecular Biology

The Institute for Cellular and Molecular Biology, Alan Lambowitz, Director, invites applications for two tenure-track/tenured positions in eukaryotic molecular biology. Academic appointments at the level of Assistant, Associate, or Full Professor will be in an appropriate academic unit in the College of Natural Sciences. Candidates should have an outstanding record of research productivity and a research plan that utilizes molecular and biochemical approaches to address important problems in eukaryotic molecular biology. Areas of particular interest include but are not limited to chromatin structure, regulation of gene expression, microRNAs and RNA interference, DNA damage responses, and cell cycle control.

Building on a strong existing faculty, the Institute has recruited more than 50 new faculty members over the past ten years (see www.icmb.utexas.edu). In addition to its highly interactive and interdisciplinary research environment, the Institute provides administrative and financial support for the Graduate Program in Cell and Molecular Biology and state-of-the-art core facilities including DNA sequencing, mass spectrometry, electron and confocal microscopy, DNA microarrays, robotics, and mouse genetic engineering. A recently instituted MD-PhD program with the UT Medical Branch and the new Dell Pediatrics Research Institute further enhance the environment for basic Biomedical Research.

Austin is located in the Texas hill country and is widely recognized as one of America's most beautiful and livable cities.

Please apply on-line at <http://www.icmb.utexas.edu/apply/between> Sept. 1 and Nov. 1, 2008.

*The University of Texas at Austin is an Equal Opportunity Employer.
Qualified women and minorities are encouraged to apply; a background
check will be conducted on applicant selected.*



Assistant Professorships in Systems Biology at Harvard University

Harvard University has a large and growing systems biology community composed of faculty, fellows, and trainees, housed at several locations across the Boston area. This year, faculty positions are available in four locations. Applications for positions at the rank of assistant professor (tenure track) are especially encouraged, but exceptional candidates for associate professor (untenured) positions may also be considered.

1. The **FAS Center for Systems Biology** (<http://sysbio.harvard.edu/csb/>) on the Cambridge campus has two positions available and is particularly interested to hire in the field of microbial evolution and ecology and the field of physical properties of biological systems, but will consider outstanding candidates in other fields. Each new faculty member will hold an academic appointment in a participating department, such as Molecular and Cellular Biology or Organismic and Evolutionary Biology. Access to Harvard facilities including the Center's own Core Resource, the Center for Nanoscale Systems, the Center for Brain Science, and the Broad Institute will provide opportunities for collaborative research and technology development.

2. The **MGH Center for Systems Biology** (<http://csb.mgh.harvard.edu/>) has one position available. This position is a joint appointment with the Department of Systems Biology at Harvard Medical School. The candidate will work in close proximity to MD and PhD scientists with strong research programs in human disease. He/she will have the opportunity to establish collaborations with MGH clinicians, and with researchers and technology programs at the Broad Institute. Areas of special interest include: how disease-causing mutations perturb cellular networks to yield disease phenotypes; identification of network nodes that may be novel drug targets; epigenetics and disease; gene-environment interactions; using computational methods, quantitation, statistics, modeling and analysis of large data sets to understand mechanisms of complex disease, and to translate this understanding into new diagnostic methods, treatments, or prevention strategies. Expertise at analyzing (and/or generating) large data sets to investigate biological pathways and networks, using model organism or human samples, would be especially welcome.

3. The **Department of Systems Biology at Harvard Medical School** (<http://sysbio.med.harvard.edu/>) has two positions available. Special interests include systematic, quantitative and/or theoretical approaches to the following biological areas: variation in gene expression and function (such as variation in transcriptional control, translational control, protein degradation or protein modification); proteomics, particularly mass spectrometry; human genetics and population genetics; pharmacology, physiology and metabolism.

4. The **Harvard Institute for Biologically Inspired Engineering** (<http://hibie.harvard.edu/>). This position is a joint appointment with the Department of Systems Biology at Harvard Medical School. The special focus of this recruitment is Synthetic Biology, i.e. using genetic engineering and nanotechnology to build programmable self assembling materials, biological factories or integrated multifunctional living microdevices. The successful candidate will become a member of a new interdisciplinary research institute composed of experimentalists, theoreticians and clinicians from Harvard University, its affiliated hospitals, and other academic institutions in the Boston/Cambridge area. The Institute's central focus is research and advanced technology development and translation in the field of biologically inspired engineering.

Applications are due by **December 1, 2008**. Please submit a curriculum vitae, research proposal (≤ 5 pages), summary of previous research accomplishments (≤ 2 pages), and PDFs of ≤ 3 publications to <http://www.lsddiv.harvard.edu/csb/facultysearch/>. All files must be submitted electronically in PDF or Word format. During the application process you will be asked to give the e-mail addresses of at least three colleagues who have agreed to write letters of recommendation for you. You will also need to state which position you are interested in, or whether you are interested in more than one.

Applications from, or nominations of, women and minority candidates are encouraged. Harvard University and the Massachusetts General Hospital are Affirmative Action/Equal Opportunity Employers.

IOWA STATE UNIVERSITY

Where you can become your best.

College of Agriculture and Life Sciences
Department of Natural Resource Ecology and Management

Chair, Department of Natural Resource Ecology and Management

Iowa State University, one of the nation's leading land-grant universities, is seeking a visionary leader for its Department of Natural Resource Ecology and Management (NREM). The NREM Department was formed on July 1, 2002, through the merger of the Animal Ecology and Forestry departments. This unit reflects a diversity of disciplines, including ecology and other biological sciences, social science, economics, sustainable resource management and utilization, and human dimensions, and has strategically developed interdisciplinary programs that attract many students. The department has over 350 students enrolled in the department's undergraduate and graduate programs. The department has 32 faculty members. A description of the department's mission, programs, faculty and facilities is available at <http://www.nrem.iastate.edu/>.

This is a 12-month appointment with starting date to be negotiated. The successful candidate will provide visionary leadership to serve the needs of students and stakeholders and to fulfill the university's land-grant mission; demonstrate effective leadership abilities including skills in organization, budgeting and communications; stimulate and facilitate excellence in all aspects of the department's teaching, research, extension, outreach and service programs, assist the department in obtaining resources through extramural funding; have appropriate experience to qualify for the rank of professor and tenure; and have an earned doctorate in a discipline relevant to the subject areas of the department. For a complete job description, go to www.iastatejobs.com - vacancy ID: 080782.

All interested, qualified persons must apply for this position through the ISU Jobs website at www.iastatejobs.com. Applications will be accepted immediately with a deadline of **December 1, 2008** or until the position is filled. Please direct questions to **Dr. Paul Lasley, Chair, NREM Chair Search Committee** at 515/294-2506. Email: plasley@iastate.edu.

Iowa State University is an Affirmative Action/Equal Opportunity Employer.

Assistant Professor, Vertebrate Conservation Biology (Terrestrial Emphasis) Department of Wildlife, Fish, and Conservation Biology, University of California, Davis

We are recruiting a Vertebrate Conservation Biologist (terrestrial emphasis) at the tenure track **ASSISTANT PROFESSOR** level, with the possibility of an appointment in the California Agricultural Experiment Station. Candidates must have the ability to develop a vigorous, extramurally funded research program that addresses questions relevant to the conservation of vertebrates in California's diverse terrestrial environments, and to teach courses in vertebrate conservation biology. Qualifications include Ph.D. in relevant discipline, and evidence of potential for accomplishment in research, teaching, and service.

Information and applications: <https://secure.caes.ucdavis.edu/Recruitment/>. Inquiries: **Professor Dirk Van Vuren, Committee Chair, (530) 752-4181, email: dhvanvuren@ucdavis.edu**. The position will remain open until filled but to ensure consideration, applications should be received by **19 December 2008**.

UC Davis is an Affirmative Action/Equal Employment Opportunity Employer and is dedicated to recruiting a diverse faculty community. We welcome all qualified applicants to apply, including women, minorities, veterans, and individuals with disabilities.

PRESIDENT OF THE SANTA FE INSTITUTE

The Santa Fe Institute (SFI) is seeking a President who can be an effective leader of this unique institution. The successful candidate must be a compelling representative for the broad, transdisciplinary research program carried out at SFI.

Nominations and applications for this position are invited, and should be sent to: Charles F. Stevens, Chair, Presidential Search Committee, Santa Fe Institute, MS202S, 1399 Hyde Park Road, Santa Fe, NM 87501

SFI is an equal opportunity employer
<http://www.santafe.edu>



SANTA FE INSTITUTE



Professor and Head Division of Cell Biology and Biophysics

Applications are invited for the Head of the Division of Cell Biology and Biophysics at the School of Biological Sciences, University of Missouri-Kansas City. The successful candidate should have a proven record of sustained externally funded research, scholarly activity, and leadership potential. The candidate will be expected to participate in graduate and/or undergraduate teaching, faculty mentorship, and work closely with the Dean on decision-making matters pertaining to the growth, development and direction of the School. The School of Biological Sciences is positioning itself to become a regional leader in the areas of structural biology and molecular cell biology and welcomes applications from qualified candidates in these research areas; however, outstanding scientists from all areas of basic life sciences research are encouraged to apply. The successful candidate will receive a competitive 12-month salary, renovated research space, a start-up package commensurate with rank, and the availability of excellent research support facilities within the School of Biological Sciences. Candidates should have a Ph.D. degree and currently be in a tenured academic position at the rank of Professor.

To apply, please submit electronically (MS Word or pdf) a CV, a statement of present and future research interests, and the names and addresses of 3 references to: **Ms Micaela Escareno (escarenom@umkc.edu)**. All materials will be handled with strict confidentiality. The position will remain open until filled.

UMKC is an Affirmative Action/Equal Opportunity Employer. Women, minorities, veterans, and individuals with disabilities are encouraged to apply.

Research Group Leaders

The London Research Institute (LRI) is Cancer Research UK's flagship research institute, focusing on the analysis of fundamental biological processes related to cancer. LRI encourages pursuit of ambitious and longer term research programmes at the highest level.

LRI scientists are funded directly through the Institute's core grant from Cancer Research UK, Europe's largest independent cancer research organisation, as part of its comprehensive portfolio of basic, applied and clinical research. The Institute's international staff work in 50 research groups, housed in well-supported laboratories at Lincoln's Inn Fields in central London, and at **Clare Hall** in Hertfordshire.

We are seeking innovative scientists to establish independent research programmes at the LRI **Clare Hall Laboratories** and to contribute to the Institute's vibrant scientific programme. LRI Group Leaders receive generous Institute core funding for personnel (research fellows, graduate students and technical support), laboratory consumables, and access to the Institute's scientific core facilities, backed by a substantial laboratory space and equipment package. Junior appointments are initially for seven years, with consideration for promotion in the sixth year. Suitably experienced applicants may be appointed at a senior level.

For 2008 recruitment, we are interested in scientists interested in addressing fundamental questions in the area of:

Genome Integrity and Cell Cycle

Including but not limited to

Gene expression mechanisms; DNA repair mechanisms and regulation; Mammalian cell cycle.

Outstanding candidates working in any area of basic cancer biology which complements the interests of the Institute will also be considered favourably: our primary criterion for appointment will be the quality of the scientist.

Informal enquiries may be made by e-mail to john.diffley@cancer.org.uk

For information about the London Research Institute, its staff, and their research interests visits
www.london-research-institute.co.uk

Applications should be submitted electronically to Dr Ava Yeo at the address below and must include:

1. Complete CV
2. Past and current research interests (approx 500 words)
3. Future research proposals (1000-1500 words)

**At the time the application is submitted
three referees should be instructed to submit letters of recommendation to:**

Dr Ava Yeo, Director of Operations, London Research Institute, 44 Lincoln's Inn Fields, London WC2A 3PX, UK.
E-mail: ava.yeo@cancer.org.uk; Confidential Fax (references only): (44)-20-7269-3585

Applications should be received by 14th November 2008

MONTEREY BAY AQUARIUM RESEARCH INSTITUTE

2009 POSTDOCTORAL FELLOWSHIPS

Founded in 1987 and supported by the David and Lucile Packard Foundation, The Monterey Bay Aquarium Research Institute (MBARI) is a non-profit oceanographic research institute, dedicated to the development of state-of-the-art instrumentation, systems, and methods for scientific research in the oceans. MBARI's research center includes science and engineering laboratories, as well as an operations facility to support our research vessels and oceanographic equipment, including remotely operated and autonomous underwater vehicles. Located in Moss Landing, California, the heart of the nation's largest marine sanctuary, MBARI places a balanced emphasis on science and engineering, with established programs in marine robotics, ocean physics, chemistry, geology, and biology, as well as information management and ocean instrumentation research and development.

MBARI invites applications each year for several postdoctoral fellowships in the fields of biological, chemical, and physical oceanography, marine geology, and ocean engineering. Fellowships may require occasional trips to sea. Awards are typically for two years.

Candidates must be awarded their Ph.D. degree prior to commencing the two-year appointment between September 2009 and March 2010.

Applicants are encouraged to communicate with potential research sponsors at MBARI for guidance on project feasibility, relevance to ongoing MBARI research, and resource availability.
(<http://www.mbari.org/about/researchers.html>)

Application deadline: Thursday, December 11, 2008

Selected candidates will be contacted in early March 2009.

Application requirements:

1. Curriculum vitae
2. At least three professional letters of recommendation
3. Succinct statement of the applicant's doctoral research
4. Potential research goals at MBARI
5. Supplemental Information online form
(http://www.mbari.org/oed/jobs/forms/postdoc_form.htm)

Competitive compensation and benefits package.

MBARI considers all applicants for employment without regard to race, color, religion, sex, national origin, disability, or veteran status.

Address your application materials to:

MBARI, Human Resources

Job code: Postdocs-2009

7700 Sandholdt Road, Moss Landing, CA 95039-9644

Submit by e-mail to jobs_postdocs@mbari.org (preferred),
by mail, or fax to (831) 775-1620.



EOE • MBARI Welcomes Diversity

Boston University College of Health
& Rehabilitation Sciences: Sargent College
Department of Health Sciences



Tenure-Track Position in Computational Physiology/Neurobiology

The Dept. of Health Sciences at Boston University is searching for a tenure-track faculty member at the Assistant Professor level in the areas of Bioinformatics, Computational Biology, or Systems Biology relevant to Physiology/Neurobiology. In exceptional cases candidates at the Associate or Full Professor level will be considered. The department has undergraduate programs in human physiology, health science, and nutrition, and a graduate program in physiology and neurobiology. Faculty have active research in muscle biology, cytoskeletal signaling, and neurobiology. Opportunities for collaborations exist in other research programs at Boston University, and through interdisciplinary programs in bioinformatics, systems biology, and experimental and computational neuroscience. Applicants should have a doctorate in physiology, cell biology, neurobiology, or a related field, and post-doctoral training, a strong scholarly record with research funding, or potential for funding and a commitment to further develop departmental undergraduate and graduate programs.

Please submit a letter of application, C.V., statement of research plans and names of three individuals who can provide letters of reference to: **D. Charland, Assist. to the Search Committee, Dept. of Health Sciences, Boston University, 635 Commonwealth Avenue, 4th floor, Boston, MA 02215.**

*Boston University is an Equal Opportunity/
Affirmative Action Employer.*

COLUMBIA UNIVERSITY Department of Biological Sciences TENURE-TRACK FACULTY POSITION

The Department of Biological Sciences at Columbia University invites applications for a tenure-track faculty position at the assistant professor level. We are especially interested in new investigators and those early in their independent careers. We are seeking highly accomplished individuals with innovative research records and future plans, who will complement the current strengths and collegial atmosphere of the Department. Our Department has a long history of leadership in modern biology and a broad multidisciplinary focus (see <http://www.columbia.edu/cu/biology/>). We are located on the main campus of Columbia University, surrounded by other basic science and engineering departments, and have strong ties to our Medical School. We expect that the successful candidate will develop a vigorous research program and also participate in undergraduate and graduate teaching.

Send CV, statement of research goals, and three letters of reference **by November 17, 2008**, to:

**[academicjobs.columbia.edu/applicants/
Central?quickFind=50780](http://academicjobs.columbia.edu/applicants/Central?quickFind=50780)**

Columbia University is an equal opportunity/affirmative action employer.



Ecologist

Tenure-track position beginning August 2009. Rank and salary commensurate with experience. Ph.D. preferred, ABD considered. Commitment to undergraduate teaching in liberal arts setting essential. Teaching responsibilities include: general education and introductory biology, advanced ecology and environmental biology. Successful candidate expected to develop a research program involving undergraduates; preference may be given to those with field research programs adaptable to local systems. Preference for individuals whose expertise complements that of existing faculty members. For information about department, visit <http://www.depauw.edu/acad/biology/>. DePauw has exceptional faculty development programs including pre-tenure leave and internal grants (see <http://www.depauw.edu/admin/acadaffairs/facdev/>). Submit letter of application, curriculum vitae, three letters of recommendation, transcripts, statements of teaching philosophy and research interests, and evidence of teaching effectiveness to: **Ecology Search Committee, Department of Biology, DePauw University, Greencastle, IN 46135.** Review of applications begins October 15, 2008 and continues until position is filled.

DePauw University is an Equal Opportunity Employer. Women and members of under-represented groups are encouraged to apply.

Research Group Leaders

The London Research Institute (LRI) is Cancer Research UK's flagship research institute, focusing on the analysis of fundamental biological processes related to cancer. LRI encourages pursuit of ambitious and longer term research programmes at the highest level.

LRI scientists are funded directly through the Institute's core grant from Cancer Research UK, Europe's largest independent cancer research organisation, as part of its comprehensive portfolio of basic, applied and clinical research. The Institute's international staff work in 50 research groups, housed in well-supported laboratories at **Lincoln's Inn Fields** in central London, and at Clare Hall in Hertfordshire.

We are seeking innovative scientists to establish independent research programmes at the LRI **Lincoln's Inn Fields** Laboratories and to contribute to the Institute's vibrant scientific programme. LRI Group Leaders receive generous Institute core funding for personnel (research fellows, graduate students and technical support), laboratory consumables, and access to the Institute's scientific core facilities, backed by a substantial laboratory space and equipment package. Junior appointments are initially for seven years, with consideration for promotion in the sixth year. Suitably experienced applicants may be appointed at a senior level.

For 2008 recruitment, we are interested in scientists interested in addressing fundamental questions in the areas of:

Biology of Tissues and Tumours

including but not limited to

Tumour-host interactions; Oncogenes and tumour suppression; Cancer models.

Cell Regulatory Mechanisms

including but not limited to

Signal transduction mechanisms; Chromosome biology; Gene expression; Molecular cell biology.

Outstanding candidates working in any area of basic cancer biology which complements the interests of the Institute will also be considered favourably: our primary criterion for appointment will be the quality of the scientist.

Informal enquiries may be made by e-mail to

david.horowicz@cancer.org.uk, julian.downward@cancer.org.uk, richard.treisman@cancer.org.uk

For information about the London Research Institute, its staff, and their research interests visit

www.london-research-institute.co.uk

Applications should be submitted electronically to Dr Ava Yeo at the address below and must include:

1. Complete CV
2. Past and current research interests (approx 500 words)
3. Future research proposals (1000-1500 words)

At the time the application is submitted three referees should be instructed to submit letters of recommendation to:

Dr Ava Yeo, Director of Operations, London Research Institute
44 Lincoln's Inn Fields, London WC2A 3PX, UK.

E-mail: ava.yeo@cancer.org.uk; Confidential Fax (references only): (44)-20-7269-3585

Applications should be received by 14th November 2008



Faculty Position Assistant or Associate Professor of Medicinal Chemistry

The Division of Medicinal and Natural Products Chemistry of the College of Pharmacy at the University of Texas at Austin invites applications for a tenure-track Assistant or Associate Professor. Appointment as Associate Professor requires demonstrated sustained extramural grant support and research, and scholarship achievements that are consistent with appointment to rank at a research-intensive university. The successful applicant for the Assistant Professor position will be expected to establish a vigorous externally funded research program in any area of modern medicinal or bioorganic chemistry. In addition to performing cutting edge research, the successful applicant will be expected to teach in the Pharm.D. program and develop graduate courses in the area of research expertise. Qualified candidates must have an earned Ph.D. in Medicinal Chemistry, Chemistry, Biochemistry, or the Biological Sciences, relevant postdoctoral experience, and be able to demonstrate effective teaching. The University of Texas at Austin is a leading tier one, research focused, state university and the College of Pharmacy offers an exciting and highly visible research environment with excellent opportunities for collaboration with faculty in the Department of Chemistry and Biochemistry and the Institute for Cellular and Molecular Biology. Additional information regarding UT College of Pharmacy can be located at: <http://www.utexas.edu/pharmacy/>. All positions offer a competitive salary and benefits package.

We welcome qualified applicants to submit application materials by **November 17, 2008**, however review of applications will begin immediately upon receipt and will continue until the position is filled. Applicants should submit electronically (preferred), a letter of application with a summary of research plans, curriculum vitae, and the names of 3 professional references to: whitman@mail.utexas.edu. Applicants should address all communication to:

Christian P. Whitman, Ph.D.
College of Pharmacy
1 University Station C0850
The University of Texas at Austin
Austin, Texas 78712

*Women and minorities are encouraged to apply.
The University of Texas at Austin is an Affirmative Action, Equal Opportunity Employer.*



FACULTY POSITIONS CENTER FOR NEURAL DEVELOPMENT AND DISEASE

The Center for Neural Development and Disease at the University of Rochester School of Medicine and Dentistry invites applications for tenure-track faculty positions at the Assistant, Associate, or Full Professor level. Candidates should employ genetic, molecular and/or physiological approaches to carry out vigorous and creative research on important problems in neural development and function in health and disease. Successful applicants will join a dynamic, interdepartmental group of investigators whose research spans a broad area of molecular and cellular neuroscience.

Interested candidates should submit a cover letter, CV, and statement of research interests to cnddsearch@urmc.rochester.edu. Please also arrange for three letters of reference to be sent to this address.

The University of Rochester is an Equal Opportunity Employer, has a strong commitment to diversity and actively encourages applications from candidates from groups underrepresented in higher education.

CHAIR Department of Basic Science NYU COLLEGE OF DENTISTRY

The New York University College of Dentistry (NYUCD) is seeking a strong academic leader to serve as Chair of Basic Science. The College has undergone extensive renovation and currently has 28,000 square feet of research space, which it is currently planning to dramatically increase over the next 3-5 years. The College is located on 1st Avenue within the medical complex that includes the College of Dentistry, School of Medicine, affiliated hospitals and several vibrant research institutes.

The Department of Basic Science consists of 24 full-time faculty members and an additional 12 part-time and adjunct members. Research strengths of the department include cancer, infectious diseases, oral-systemic disease linkages, and tissue engineering. The department is also responsible for the teaching of the basic science courses to DDS, Post-graduate and Graduate students. The chair will oversee the teaching, research and future growth of the department.

This is a full time tenured position at the rank of Associate or Full Professor. Candidates must possess a PhD, DDS, MD degree or a combination thereof, have outstanding administrative experience and be a distinguished researcher with an international reputation and a strong track record of research funding.

NYUCD has demonstrated an entrepreneurial philosophy in its recruitment of academic leaders with respect to professional packages, in addition to offering competitive salaries and benefits.

Please submit a CV and a statement of interests and goals to **Dr. Daniel Malamud, Chair of the Basic Science Chair Search committee, Department of Basic Science, NYU College of Dentistry, 345 East 24th Street, Room 9175, New York, NY, 10010-4086** or via e-mail to daniel.malamud@nyu.edu.



NEW YORK UNIVERSITY

NYU is an Equal Opportunity/Affirmative Action Employer.

Vice-Chair for Research/Open Rank

The Department of Anesthesiology, University of Texas Health Science Center at San Antonio, Texas (UTHSCSA) invites nominations and applications for the position of Vice-Chair for Research (VCR). As the chief research officer for the department, the VCR is responsible for implementation of the research vision, the overall management of departmental research activities, and the administration of sponsored research. The VCR will engage in multidisciplinary collaboration within UTHSCSA—a Clinical and Translational Science Award (CTSA) grantee—and its affiliated institutions.

Qualifications for this position include an M.D., M.D.-Ph.D., or Ph.D. degree in an appropriate field of study. The successful candidate will have a national/international reputation as a distinguished scientist with an outstanding record of research accomplishments; a proven track record of directing a research enterprise; outstanding communication skills as evidenced by an ability to mentor junior faculty, scientists, residents, and students. The candidate must be a critical and strategic thinker and a visionary leader who can develop and enhance the research enterprise; and one who can demonstrate expertise in crafting interdisciplinary proposals and negotiating multi-faceted awards. One or more currently funded NIH grant(s) and experience in translational research is highly desirable. Given the excellent research infrastructure in neurobiology at UTHSCSA, research experience in pain medicine would be a plus.

For more information, please visit our website at www.anesthesia.uthscsa.com. To apply or nominate a candidate for the position of Vice-Chair for Research, Department of Anesthesiology, U.T. Health Science Center at San Antonio, please submit a current CV, supporting documents, and names and addresses of five references to: **J. Jeffrey Andrews, M.D., Chair, Department of Anesthesiology – MSC 7838, U.T. Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, TX 78229.**

*All faculty appointments are designated as security sensitive positions.
The University of Texas Health Science Center at San Antonio is an
Equal Employment Opportunity/Affirmative Action Employer.*



The Salk Institute for Biological Studies, a world class scientific environment and workplace located in La Jolla, CA, is inviting applications for:

Assistant Professor Positions In Immunobiology & Microbial Pathogenesis

The successful applicants will work on a new initiative in the areas of cellular immunology, microbial pathogenesis and inflammation biology. The Salk Institute offers a highly interactive environment with leading programs in neuroscience, cancer, metabolism and microbiology. The successful applicants will be expected to develop and maintain an independent research program and help establish new interdisciplinary programs aimed at investigating the role of inflammation in the onset and progression of human diseases.

The Salk Institute offers an excellent start-up package, along with a competitive salary and benefits.

Information on how to apply may be found on Salk's website at: http://www.salk.edu/careers/careers_current_faculty.php. The Salk Institute for Biological Studies, 10010 N. Torrey Pines Road, La Jolla, CA 92037. EOE.

ECOLOGY FACULTY POSITION FORDHAM UNIVERSITY

The Department of Biological Sciences of Fordham University invites applicants for a tenure-track faculty position at the **ASSISTANT PROFESSOR** level for Fall 2009 in **POPULATION BIOLOGY** or **SYSTEMATICS** of one of the following: arthropods, fish, herps, or microbes. The department has an active research program and provides excellent physical facilities, state-of-the-art equipment, a stimulating research environment, start-up funds, and competitive salaries and benefits. Special consideration will be given to applicants who can collaborate with members of our existing programs in the areas of urban ecology, disease ecology or vector ecology, including the New York state vector lab at Fordham's biological field station – the Louis Calder Center, and with the New York Botanical Garden, the Wildlife Conservation Society, and other scientific institutions in the region. The successful candidate should have postdoctoral experience. The appointee will be expected to establish an active research program and participate in teaching at the graduate and undergraduate levels. Please submit curriculum vitae, two reprints, research statement, teaching philosophy and the names and contact information of three references by **December 1, 2008** to: **Dr. William Thornhill, Chair, Department of Biological Sciences, Fordham University, 441 E. Fordham Road, Larkin Hall 160, Bronx, NY 10458** and/or by email to thornhill@fordham.edu.

Fordham University is an independent, Catholic university in the Jesuit tradition that welcomes applications from men and women of all backgrounds. Fordham is an EO/AA Employer.



King Abdullah University of Science and Technology (KAUST)

Faculty Openings in Chemical and Biological Engineering

King Abdullah University of Science and Technology (KAUST) is being established in Saudi Arabia as an international graduate-level research university dedicated to inspiring a new age of scientific achievement that will benefit the region and the world. As an independent and merit-based institution and one of the best endowed universities in the world, KAUST intends to become a major new contributor to the global network of collaborative research. It will enable researchers from around the globe to work together to solve challenging scientific and technological problems. The admission of students, the appointment, promotion and retention of Faculty and staff, and all the educational, administrative and other activities of the University shall be conducted on the basis of equality, without regard to race, colour, religion or gender.

KAUST is located on the Red Sea at Thuwal (80 km north of Jeddah). Opening in September 2009, KAUST welcomes exceptional researchers, faculty and students from around the world. To be competitive, KAUST will offer very attractive base salaries and a wide range of benefits. Further information about KAUST can be found at <http://www.kaust.edu.sa/>

KAUST invites applications for Faculty positions at all ranks (Assistant, Associate or Full Professor) in Chemical and Biological Engineering including areas such as:

- Biological Engineering (biomedical engineering; biotechnology and bioprocess engineering)
- Natural Resource Engineering (energy engineering; environmental engineering)
- Fluids Engineering (fluid mechanics; molecular modelling and thermodynamics)
- Particle and Materials Engineering (complex materials; surfaces and interfaces)
- Process Systems Engineering (methodologies; applications)
- Reaction and Separation Engineering (reaction engineering and catalyst technology; separation engineering and technology)

High priority will be given to the overall originality and promise of the candidate's work rather than the candidate's sub-area of specialization within Chemical or Biological Engineering. Nevertheless, KAUST is particularly interested in applicants whose research has applications in the fields of water desalination, clean combustion and catalysis.

An earned Ph.D. in Chemical Engineering or a related science or engineering discipline, evidence of the ability to pursue a program of research, and a strong commitment to graduate teaching are required. Applicants should have at least one year of postdoctoral research experience. A successful candidate will be expected to teach courses at the graduate level and to build and lead a team of graduate students in Master's and PhD research.

Applications, including a curriculum vitae, brief statements of research and teaching interests, and the names and contact details of at least 3 referees, should be sent to the Search Committee by electronic mail to kaust.chemeng@imperial.ac.uk. Please note that the Search Committee may also appoint additional referees at its discretion. The review of applications will begin immediately, and applicants are strongly encouraged to submit applications as soon as possible; however, applications will continue to be accepted until December 2009, or until all 10 available positions have been filled.

In 2008 and 2009, as part of an Academic Excellence Alliance agreement between KAUST and Imperial College London, the KAUST Faculty search will be conducted by a committee consisting of professors from the Faculty of Engineering at Imperial College London. This committee will select the top applicants and nominate them for Faculty positions at KAUST. However, KAUST will be responsible for actual recruiting decisions, appointment offers, and explanations of employment benefits. The recruited Faculty will be employed by KAUST, not by Imperial. Faculty members recruited by KAUST before September 2009 will be hosted in Chemical Engineering at Imperial College London as Academic Visitors until KAUST opens in September 2009. At Imperial, these Academic Visitors will conduct research with Imperial staff and may occasionally teach courses.

Enquires and applications: kaust.chemeng@imperial.ac.uk

Valuing diversity and committed to equal opportunities



COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Neuroscience Faculty Recruitment

The Department of Neuroscience at Columbia University Medical Center, as part of a University-wide Neuroscience Initiative, is recruiting faculty concentrating on the analysis of neural circuitry through molecular, genetic, cellular electrophysiological and/or imaging approaches. We are particularly interested in individuals whose research program explores neural circuits in genetically tractable model systems and in the context of well-defined behaviors, synaptic connectivity, and/or development. We encourage applications for positions at the Assistant Professor level, but will also consider applications from more senior investigators for positions at the level of Associate or full Professor.

Columbia University currently has a world-renowned program in neurobiology and behavior, and the Neuroscience Initiative aims to enhance interactions between basic and clinical neurosciences and link the neurosciences to other scientific disciplines within the University. Faculty will be affiliated with the Department of Neuroscience and the Doctoral Program in Neurobiology and Behavior and there will be opportunities for strong ties with scientific departments and programs on the Morningside Heights campus.

Applications for this round of recruitment are requested by **November 14, 2008**. A CV, cover letter including statement of interests, and three letters of reference under separate cover should be e-mailed care of **David Leyden, dgl2102@columbia.edu**. In addition, please mail a hard copy of these documents to:

Chair, Neuroscience Search Committee
c/o: David Leyden
Columbia University
Hammer Health Sciences Center
Room 2-205G
701 West 168th Street
New York NY 10032

Columbia University takes affirmative action to ensure equal employment opportunity.



Comparative Anatomist/Neurobiologist

Tenure-track position beginning August 2009. Rank and salary commensurate with experience. Ph.D. preferred, ABD considered. Commitment to undergraduate teaching in liberal arts setting essential. Teaching responsibilities include: general education and introductory biology, advanced courses in comparative anatomy, neurobiology and area of expertise. Successful candidate is expected to develop a research program involving undergraduate students. For information about department, visit <http://www.depauw.edu/acad/biology/>. DePauw has exceptional faculty development programs including pre-tenure leave and internal grants (see <http://www.depauw.edu/admin/acadaffairs/facdev/>). Submit letter of application, curriculum vitae, three letters of recommendation, transcripts, statements of teaching philosophy and research interests, and evidence of teaching effectiveness to: **Comparative Anatomy/Neurobiology Search Chair, Department of Biology, DePauw University, Greencastle, IN 46135**. Review of applications begins October 15, 2008 and continues until position is filled.

DePauw University is an Equal Opportunity Employer. Women and members of under-represented groups are encouraged to apply.



TWO ASSISTANT PROFESSOR POSITIONS DEPARTMENT OF PHYSIOLOGY MEMPHIS, TN

The Department of Physiology at The University of Tennessee Health Science Center (UTHSC) in Memphis invites outstanding scientists with Ph.D., M.D., or equivalent degrees for **two tenure-track faculty positions at the rank of assistant professor to begin July 1, 2009**. We are searching for creative scientists who have or will establish an extramurally funded research program and also excel at teaching medical, dental, and graduate students. UTHSC is the state's flagship academic health center with an annual budget of close to 400 million dollars, and the Department of Physiology is currently ranked seventh based on extramural funding by the American Physiological Society. While we will consider applicants in all areas of physiology, the Department has a particular interest in recruiting candidates with experience studying the interface between immunity and vascular biology, stem cell physiology, or innovative techniques in molecular physiology. The positions are part of the expansion of the department; significant new laboratory space, a substantial start up package, and a competitive salary with an additional incentive bonus will be offered.

Candidates should submit their Curriculum Vitae, a description of research interests/goals (not to exceed two pages) as a single PDF document, and arrange to have three letters of reference sent to: **Gabor Tigyi, M.D., Ph.D., Harriett Van Vleet Professor and Chair, Department of Physiology; E-Mail: PhysiologySearch@utmem.edu; Website: <http://physiol1.utmem.edu>**.

Applicants should have their applications complete by **December 15, 2008**, as review will begin upon receipt of the application.

UTHSC is an Equal Opportunity Employer. The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services.



Chief, Hydrospheric and Biospheric Sciences Laboratory

The NASA/Goddard Space Flight Center invites applications for the position of Chief of the Hydrospheric and Biospheric Sciences Laboratory, located in Greenbelt, Maryland. The Laboratory is part of the Earth Sciences Division in the Sciences and Exploration Directorate. The Chief of the Hydrospheric and Biospheric Sciences Laboratory is responsible for all the activities of the Laboratory whose mission is to conceive, develop, and implement cutting-edge observations from space to carry out a large range of basic and applied research dedicated to advancing knowledge and understanding of the Earth's oceanic, cryospheric, biospheric, and hydrospheric systems.

The laboratory chief is also responsible for encouraging mutually beneficial collaborative activities with other NASA organizations, with universities, other Government agencies, and private scientific institutions. The laboratory chief performs individual research and may act as a principal investigator, a co-investigator, and/or a project scientist on NASA missions, in addition to being the supervisor for personnel within the laboratory.

This search is targeted primarily to those with an advanced degree and extensive post-graduate experience in both scientific research and scientific management. The incumbent must be recognized as an authority in an area of hydrospheric or biospheric science that is relevant to the primary activities of the laboratory. Compensation for this position ranges from \$115,317 to \$149,000 per annum, including locality pay. Salary will be commensurate with the incumbent's experience.

Interested applicants are welcome to submit a curriculum vitae and a statement of career interest of approximately 1000 words to Ms. Emilie Rank, email: emilie.j.rank@nasa.gov. For more information about position requirements and application procedures, please call **Emilie Rank at (301) 614-5566**; and for scientific questions, please call **Dr. Franco Einaudi, Director of the Earth Sciences Division at (301) 614-5634**.

The Goddard Space Flight Center has and encourages a diverse workforce. Equal Opportunity Employer. U.S. citizenship required.

With a staff of 4400, we are one of the largest interdisciplinary research centres in Europe and are also a member of the Helmholtz Association of German National Research Centres. We work in the fields of "Health", "Energy and the Environment", and "Information". To assist us we have top-class super-computers at our disposal.



www.fz-juelich.de

For our Institute of Neurosciences and Biophysics – Medicine (INB-3), we are seeking the following:

PHYSICISTS ELECTRICAL/RF ENGINEERS COMPUTER SCIENTISTS

A new 9.4T high-field MRI scanner is currently being installed in Jülich. This scanner will be capable of the **simultaneous** acquisition of MRI and PET data in human studies and is thus the first system worldwide to combine high-field MRI and PET. Additionally, the Institute houses state-of-the-art 1.5T, 3T and 4T human MRI scanners, a 3T hybrid MR-PET and a 9.4T animal MRI scanner. All of the scanners are based on the Siemens software and hardware platform.

The position offers you:

The opportunity to participate in the following projects:

- Development of new MRI sequences designed for brain imaging and neuroscientific applications targeting structural and functional MRI, e.g. ultra-fast MRI techniques, DTI, and contrast-enhanced, high-resolution imaging
- Development of new *in vivo* methods for quantitative MRI including image processing of quantitative data
- Development of new imaging methods for the *in vivo* quantification of other MR-active nuclei such as ^{23}Na and ^{17}O in the brain
- Development of RF coils and coil arrays for high-field MRI as well as hybrid MR-PET imaging.

Qualifications required:

Applicants should possess a PhD in physics or one of the above subjects; in depth experience and knowledge of MR imaging is indispensable. Cooperative teamwork as well as structured approaches to problem solving are essential requirements.

Candidates should preferably have:

Experience of object-oriented software design (C++), multivariate image analysis, digital signal processing, and computational electrodynamics would be extremely advantageous. Similarly, construction of radiofrequency coils for MRI applications or antenna design is highly desirable.

Further information at: www.fz-juelich.de/inb/inb-3/

The positions are initially for a fixed term of two years with possible extensions thereafter.

Salary and social benefits will conform to the provisions of the Collective Agreement for the German Civil Service (TVöD).

The implementation of equal opportunities is a cornerstone of our staff policy at Forschungszentrum Jülich; for this we have received the „TOTAL E-QUALITY“ Award. Applications from women are therefore particularly welcome. We also welcome applications from disabled persons.

Candidates are requested to send full applications (letter of application, CV, copies of all certificates, representative publications, brief description of your research interests and also three letters of recommendation).

Please submit your application with the **reference number 085-086/2008** to:

Forschungszentrum Jülich GmbH

Geschäftsbereich Personal
– Personalentwicklung –
52425 Jülich – Germany

contact:
Mrs. Crützen
phone: +49 2461 61-2110

VICE PRESIDENT FOR RESEARCH AND VICE PROVOST

The University of Alabama invites applications for and nominations for the position of Vice President for Research and Vice Provost.

Responsibilities: The Vice President for Research and Vice Provost is responsible for providing leadership and advancing the research goals of the University and expanding the base of research funding from federal agencies, foundations, and the private sector. The Vice President oversees university-wide research enhancement and compliance activities including the formulation and promotion of research policies and guidelines, promotion and coordination of multidisciplinary research programs, development of research infrastructure, and oversight of technology transfer and economic development activities. The Vice President fosters research collaboration between and among faculty and students at UA and other institutions within the University of Alabama System and at other research universities in the state. The Vice President fosters collaborative research partnerships with the business community to expand the University's applied research capacity.

The Vice President for Research participates with the President, Provost and other vice presidents in the senior leadership of the University. The Vice President must maintain a close working relationship with the deans, associate deans for research, center directors and other faculty.

Qualifications:

- An earned doctorate from an accredited institution in an appropriate discipline;
- Extensive professional, academic, and administrative experience in all aspects of research and technology transfer in a complex organizational environment;
- Demonstrated success in proposing, negotiating, and acquiring externally funded research;
- Capacity to work with a diverse faculty in a wide range of disciplines and have the vision and administrative expertise to create and implement innovative research initiatives;
- Ability to maintain and expand positive relationships on the campus and within the University of Alabama System.

Applications: To apply for this position, go to <https://facultyjobs.ua.edu> and apply to requisition number 0800754. Attach your resume and names, addresses and phone numbers of five references to the online faculty application. Confidential nominations may be submitted by mail to:

Dr. Martha Powell, Chair
Vice President for Research Search Committee
Office of the Provost
Box 870117
The University of Alabama
Tuscaloosa, AL 35487

Inquiries concerning the position should be directed to Dr. Martha Powell at mpowell@biology.as.ua.edu.

For full consideration, applications should be received by November 3, 2008, but review of applications will continue until the position is filled. The starting date is negotiable and the salary and benefits are competitive.

The University is located on a beautiful 1,000 acre residential campus in Tuscaloosa a community of 100,000 in central Alabama. Tuscaloosa is conveniently located between Atlanta, New Orleans and the white sandy beaches of the Gulf coast and is only 45 minutes from metropolitan Birmingham. The area offers excellent climate, reasonable living costs, minimal urban congestion and abundant outdoor recreation. The Tuscaloosa community provides rich cultural, educational and athletic resources for a broad range of lifestyles.

The University of Alabama is an Affirmative Action/Equal Opportunity Employer. Applications from women and minorities are encouraged.

Crimson is
THE UNIVERSITY OF ALABAMA



Fellowship Opportunities

Postdoctoral Fellowship appointments at the Santa Fe Institute begin fall 2009. Appointed for up to three years, fellows pursue research questions of their own design, are encouraged to transcend disciplinary lines, and collaborate with SFI faculty, other Fellows, and researchers from around the world. Successful foreign applicants must acquire an acceptable visa.



The Santa Fe Institute is an affirmative action, equal opportunity employer. We are building a culturally diverse faculty and staff and strongly encourage applications from women, minorities, individuals with disabilities, and covered veterans.



TO APPLY: View the full position announcement and application instructions at www.santafe.edu/postdoc. Application is due by November 14, 2008. For further information, email postdocinfo@santafe.edu.



SANTA FE INSTITUTE

Do what you love. Love what you do.

Senior Research Cell Molecular Biologist

Abbott's Tumor Genomics group offers a unique scientific environment, including excellent collaborative opportunities with multiple groups involved in research in the areas of apoptosis, DNA repair, angiogenesis, siRNA-mediated gene silencing, and others. We offer access to outstanding core scientific support services and a significant amount of internal genomics, informatics and cancer biology expertise, and a network of external collaborations in several areas of basic research.

Seek a highly motivated PhD in Molecular/Cell Biology or related fields to initiate and lead research projects in cancer biomarker discovery.

Incumbent will analyze critical molecular components involved in intracellular signaling and drug inhibition of cancer cell function, leading to discovery of cancer biomarkers.

- Post-doctoral experience preferred
- Strong experimental skills in cell biology including DNA and RNA work
- Demonstrated experience in cancer research
- Strong publication record required
- Experience in genomics data mining and bioinformatics preferred

If you want to work with people who share a common desire to improve the quality of people's lives, we invite you to learn more about Abbott's exciting career opportunities and employment benefits. Please visit the career section of www.abbott.com and reference requisition #52665BR when applying.

www.abbott.com/careers

An EEO/AA employer, Abbott welcomes and encourages diversity in our workforce.



Assistant Professor - Tenure Track Department of Biochemistry and Molecular Biology Wright State University Boonshoft School of Medicine and College of Science and Mathematics

The Department of Biochemistry and Molecular Biology invites applications from outstanding candidates for the position of Assistant Professor of biochemistry. This faculty position is part of the department's growth coinciding with the opening of the Matthew O. Diggs III Laboratory for Life Sciences. This is a tenure-track, nine-month appointment with a competitive startup package, the opportunity to occupy state of the art research space, and access to proteomic, genomic and NMR facilities. The department currently consists of 11 full-time faculty actively engaged in research in the areas of biochemistry, cell signaling and molecular genetics.

Applicants must have a Ph.D., M.D., or equivalent doctoral degree and at least two years of postdoctoral research experience. Applicants are expected to establish a funded, independent research program and participate in collaborative projects with current faculty. Candidates whose research employs biochemical approaches to human disease through studies of protein structure/function, protein:protein interactions and cellular signaling are encouraged to apply.

Please send a letter of application, curriculum vitae, a focused research plan, and three reference letters to: **Dr. Steven Berberich, Chair, Department of Biochemistry and Molecular Biology, Wright State University, 3640 Colonel Glenn Hwy, Dayton, OH 45435**. Review of applications will begin on **December 1, 2008** and continue until the position is filled. Please visit <http://www.med.wright.edu/bmb/> to learn more about the department, the university and the Dayton area.

Wright State University is an Equal Opportunity/Affirmative Action Employer. Candidates from groups underrepresented in academic science are strongly encouraged to apply.



DEPARTMENT OF MOLECULAR BIOSCIENCES

The Department of Molecular Biosciences at the University of Kansas seeks applications from outstanding individuals for a tenure-track ASSISTANT PROFESSOR position in the area of protein biochemistry. The successful applicant will have a strong background in applying chemical, physical and/or structural biological approaches to fundamental problems in biology. Preference will be given to candidates working in areas that enhance or complement existing departmental strengths. Important strengths include structure-function studies of enzymes and macromolecular assembly. Other existing areas of departmental strengths include signal transduction, cell and developmental biology, neurobiology, immunology, and pathogenesis (for details see <http://www.molecularbiosciences.ku.edu>). This appointment is expected to begin as early as August 18, 2009. Applicants must hold a Ph.D. or equivalent degree in biological or chemical sciences and have at least two years of post-doctoral research experience. For full job announcement visit: <http://www.clas.ku.edu/employment/>. Successful candidates will be expected to develop and maintain an active research program and contribute to the Department's teaching mission.

Interested applicants should send a cover letter, curriculum vitae, research plan, and statement of teaching philosophy to ProteinBiochem@ku.edu, preferably as a single PDF file. Applicants should also arrange to have three letters of reference sent to: **Linda Wiley, Administrative Associate, Protein Biochemistry Search, Dept. of Molecular Biosciences, Univ. of Kansas, 1200 Sunnyside Ave., Room 2034 Lawrence, KS 66045-7534**. To ensure full consideration, complete applications should be received by **November 1, 2008**.

EO/AA Employer.



Department of Health & Human Services
National Institutes of Health
National Institute of Dental and Craniofacial Research (NIDCR)
Tenured Senior Investigator



An expert is sought in the area of **Salivary Gland Biology and Physiology** to fill a tenured Senior Investigator position (Full Professor Equivalent) in the Molecular Physiology and Therapeutics Branch, Division of Intramural Research (DIR), National Institute of Dental and Craniofacial Research, NIH. The successful applicant will establish a strong research program that encompasses fundamental aspects of salivary gland biology and physiology, as well as translational research leading to clinically relevant studies. The mission of the DIR is to improve oral, dental and craniofacial health through research, research training, and the translation of discoveries to the public domain. The DIR accomplishes this mission by: 1) performing distinctive basic and clinical research that emphasizes high quality and relevance to health; 2) training the next generation of researchers in its laboratories and clinic, and 3) translating the results of its research through publications and technology transfer.

We are seeking an established senior scientist (Ph.D., D.D.S., M.D., or equivalent) with an outstanding track record in physiology (experience in salivary or other exocrine gland physiology/biology preferable), as evidenced by a strong publication record and successful funding. Research in the Branch is focused on bench-to-bedside efforts that involve acquiring basic understanding of salivary gland physiology and pathology for translation into clinically relevant studies and development of therapeutic strategies for the treatment of salivary gland dysfunction. The selected person will be expected to complement the ongoing research within the Branch and integrate with the NIDCR salivary gland research initiative, which includes efforts on pathophysiology of salivary glands and novel therapies, stem cell biology, and salivary gland morphogenesis.

Applicants should submit the following: current *curriculum vitae* with complete bibliography; names and addresses of five references; statement of research interests; and summary of proposed research plan.

Salary will be commensurate with qualifications and experience. More detailed information about the NIDCR Division of Intramural Research may be found at: <http://www.nidcr.nih.gov/Research/NIDCRLaboratories/OverviewDIR/>

Applications must be received by **December 6, 2008**. PDF versions of documents sent by electronic mail are strongly preferred. Materials should be sent to; Ms Marsha Greco, by email: grecom@mail.nih.gov; or by regular mail: NIDCR, 10 CENTER DR MSC-1190, Bldg. 10, Room 1N113, Bethesda, MD 20892-1190.

DHHS and NIH are Equal Opportunity Employers



Post Doctoral Fellowships 2008-09

CSIRO is Australia's national science organisation with over 6,500 staff located across the country. It is one of the largest and most diverse research organisations in the world, with its research delivering solutions for agribusiness, the environment, information and communication technologies, health, advanced materials and manufacturing, minerals and energy, services, transport and infrastructure.

The CSIRO Postdoctoral Fellowship Scheme provides the opportunity for postgraduates to undertake postdoctoral research projects within CSIRO for a period of three years. 20 postdoctoral positions are now being offered across a broad range of disciplines, as follows:

- Restoring Function:Vegetation Ecology and Genetics (2008/1067)
- Encapsulants for Organic Photovoltaics (2008/1069)
- Quantifying Nitrous Oxide Emission from Soil (2008/1071)
- Flow Synthesis of Histronicotoxin Alkaloids (2008/073)
- Engineering Novel Fatty Acid Desaturases (2008/1075)
- RNA Silencing in Fungal Pathogenesis (2007/1077)
- Nutrients, Grazing and Global Plant Biodiversity (2008/1079)
- Climate Change: Planning for Biodiversity Persistence (2008/1081)
- Insitu Diffraction Studies into Inert Anodes (2008/1083)
- Chemiresistor Sensor Arrays (2008/1085)
- High Temperature Fuel Cell Electrochemistry (2008/1068)
- Mycobacterial Genomics and Aetiology of Crohn's Disease (2008/1070)
- Southern Ocean, Carbon Dioxide and Climate Change (2008/1072)
- Insitu Crystallisation Studies of Jarosite Minerals (2008/1074)
- Genetic and Demographic Modeling of Self-incompatibility (2008/1076)
- Modeling of Nonlinear Dynamic Drilling System (2007/1078)
- Brain Connectivity Atlas from MRI (2008/1080)
- Local Property Enhancement in Light Alloys (2008/1082)
- Insect Prospectors for Mineral Deposit Discovery (2008/1084)
- Biomarker Discovery in Alzheimer's Disease (2008/1086)

For further information, selection documentation and details on how to apply, visit www.csiro.au/careers

Alternatively contact CSIRO on 1300 301 509

hmsC08921

POSITIONS OPEN

TWO ASSISTANT PROFESSOR POSITIONS

MARINE BIOLOGIST and CELL/MOLECULAR BIOLOGIST

The Department of Biology and Marine Biology at the University of North Carolina Wilmington (UNCW) invites applications for two tenure-track positions starting August 2009.

Marine Biologist. Candidates in any sub-discipline of marine biology are encouraged to apply.

Cell and Molecular Biologist. Candidates with research interests in the field of sensory biology are especially welcomed.

Duties for both positions include undergraduate and graduate teaching; the Cell and Molecular Biologist will contribute to the anatomy and physiology sequence. Contact **Dr. Steve Kinsey** for questions about the Marine Biologist position (e-mail: kinseys@uncw.edu; telephone: 910-962-7398) and **Dr. Ann Pabst** (e-mail: pabsta@uncw.edu; telephone: 910-962-7266) for questions about the Cell and Molecular Biologist position. For assistance with the online application process, contact **Ms. Tracie Chadwick** (e-mail: chadwick@uncw.edu; telephone: 910-962-3536). For more information and to apply, please visit [website: http://consensus.uncw.edu](http://consensus.uncw.edu). *Equal Employment Opportunity/Affirmative Action Employer.*

MOLECULAR ENVIRONMENTAL PHYSIOLOGY

The Department of Biological Sciences at the University of Wisconsin, Milwaukee seeks applicants for a tenure-track position in molecular environmental physiology at the rank of **ASSISTANT PROFESSOR**. We seek candidates with research interests in the cellular and molecular mechanisms by which signaling pathways in the endocrine or nervous systems are disrupted by environmental chemicals. Candidates must have a Ph.D. and postdoctoral experience and will be expected to establish an independent, extramurally funded research program involving M.S. and Ph.D. students in an area of physiology/toxicology and eukaryotic molecular biology. Teaching responsibilities include participation in core biology courses and an advanced course in an area of specialization. To apply, please go to [website: http://www.jobs.uwm.edu/applicants/Central?quickFind=50597](http://www.jobs.uwm.edu/applicants/Central?quickFind=50597). A completed application should include: cover letter, curriculum vitae, statement of research goals, statement of teaching interests, and letters of professional reference. Applicants should arrange to have three letters of reference sent as PDF attachments to the **Departmental Chair** (e-mail: sandgren@uwm.edu) or mailed to: **Molecular Environmental Physiologist Search, Department of Biological Sciences, University of Wisconsin-Milwaukee, P.O. Box 413, Milwaukee, WI 53201**. Screening of candidates will begin December 19, 2008, and continue until the position is filled. Appointment begins August 2009. *UWM is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION in CARIBBEAN MEDICAL SCHOOL

Saint James School of Medicine ([website: http://www.sjsm.org](http://www.sjsm.org)) is hiring faculty with teaching experience in any of the basic medical science subjects for its campus in the Caribbean (Bonaire). Immediate need is in pathology, physiology, and physical diagnosis. Applicants must be M.D. and/or Ph.D. with teaching experience in medical schools. U.S. experience is desirable but not essential. Retired persons with experience in medical education are encouraged to apply. Excellent salary and benefits. *Applicant must be fluent in English and willing to relocate. Alien Registration Receipt Card (green card) holders are a plus.* Submit resume to e-mail: career@sjsm.org or mail to: **HRDS Inc., 1480 Renaissance Drive, Suite 300, Park Ridge, IL 60068 U.S.A.**

POSITIONS OPEN

TWO CHEMISTRY FACULTY POSITIONS in the ENERGY for the FUTURE INITIATIVE University of California, Davis

The University of California (UC), Davis Department of Chemistry ([website: http://www.chem.ucdavis.edu/](http://www.chem.ucdavis.edu/)) invites applications for two chemistry faculty positions associated with the UC Davis Energy for the Future Initiative targeting major energy issues facing California and the nation. The two positions are at the **ASSISTANT PROFESSOR** level. Online applications are available at [website: http://energy.ucdavis.edu](http://energy.ucdavis.edu). This website also provides further information about the Energy for the Future Initiative, which brings a total of fourteen new faculty positions to the campus including a total of four positions in the Chemistry Department to be filled over a two-to-three year period.

The first position is in areas that focus on inorganic, materials, or solid state chemistry with fundamental research relevant to the broad field of energy. The second is in biological, inorganic, or physical chemistry, exploring fundamental energy-relevant chemistry, broadly defined in biological or bio-inspired synthetic systems. In conjunction with the campuswide Energy for the Future Initiative and UC Davis Energy Institute, these scientists will interact with colleagues in other energy-related disciplines. Competitive candidates will bring strong research programs in chemistry that are relevant to energy, as well as strong commitments to undergraduate and graduate teaching. A Ph.D. or equivalent degree in chemistry or related disciplines is required. The positions are open until filled; but to assure full consideration, online applications should be submitted no later than November 1, 2008, for a targeted start date of July 1, 2009.

The University of California is an Affirmative Action/Equal Opportunity Employer.

The Boise, Idaho VA Medical Center (MC), in association with the University of Washington, is recruiting for a full-time Board-certified **INFECTIOUS DISEASE PHYSICIAN** (M.D. or M.D.-equivalent) with strong research commitment to investigations of pathogenic mechanisms of Gram positive infections. The Boise VAMC is a Dean's Committee Hospital affiliated with the University of Washington, as well as Boise State University, the University of Idaho and Idaho State University, and has an excellent Residency Training Program in Primary Care Internal Medicine, Psychiatry and Family Practice. The incumbent will be appointed to the full-time faculty at the University of Washington at the **ASSISTANT or ASSOCIATE PROFESSOR** level in the physician/scientist pathway. University of Washington faculty engage in teaching, research, and service. Interested candidates should contact: **Dennis L. Stevens, Ph.D., M.D., Chief, Infectious Disease Section, 500 West Fort Street, Boise, ID 83702. Telephone: 208-422-1599; e-mail: dennis.stevens@va.gov**. This position is open until filled. *The Boise VAMC and the University of Washington are building a culturally diverse faculty and staff and strongly encourage applications from women, minority, individuals with disabilities, and covered veterans.*

ASSISTANT PROFESSOR, MOLECULAR FORENSIC SCIENCES. The Department of Entomology at Texas A&M University is conducting a search for a full-time, tenure-track position, 67 percent research, 33 percent teaching. The incumbent faculty member will have primary responsibility for developing an extramurally funded research program that leads to new knowledge in the forensic sciences as applicable to evidentiary analysis and interpretation resulting in novel discoveries, technologies, and applications in the area of DNA-based evidence. Research and leadership training of graduate and undergraduate students is expected for programmatic success. Other responsibilities include teaching two to three courses depending on need, supervising graduate research, and acting as a team member of the forensic science degree program. Successful candidate will have current interactions with the forensic science community. The full announcement and application instructions can be found at [website: http://insects.tamu.edu/jobs/assistantprofforensics.cfm](http://insects.tamu.edu/jobs/assistantprofforensics.cfm).

Closing date for applications is November 1, 2008. *Texas A&M University is an Equal Opportunity Employer and encourages applications from minority group members and women.*

POSITIONS OPEN



The Department of Dermatology at the University of Pennsylvania's School of Medicine seeks candidates for an **ASSISTANT, ASSOCIATE and/or FULL PROFESSOR** position in the tenure track. Rank will be commensurate with experience. The successful applicant will have experience in the field of dermatology. Responsibilities include some patient care, as well as resident, fellow, and medical student education. Applicants must have an M.D. or M.D./Ph.D. degree and have demonstrated excellent qualifications in clinical care, education, and research. Board-certified in dermatology is required.

Current research interests in the Department include: differentiation, adhesion, embryological development, stem cells and signal transduction in epidermis and hair follicles; skin and hair follicle regeneration; gene therapy targeting the epidermis and hair follicle; microRNA function in the skin; basic studies of autoimmune blistering and rheumatologic diseases of skin, impetigo and staphylococcal scalded skin syndrome; proteases in skin physiology and pathophysiology; and basic pathophysiologic and immunologic studies of cutaneous T cell lymphoma.

The effective date of appointment will be on July 1, 2009. Please submit curriculum vitae, a cover letter, three reference names, and a statement of research interests to:

Sarah E. Millar, Ph.D.

**Associate Professor, Departments of Dermatology and Cell and Developmental Biology
Director of Research, Department of Dermatology
University of Pennsylvania School of Medicine
M8D Stellar-Chance Laboratories
422 Curie Boulevard, M8D SCL
Philadelphia, PA 19104
E-mail: millars@mail.med.upenn.edu
Fax: 215-573-2033**

The University of Pennsylvania is an Equal Opportunity, Affirmative Action Employer. Women and minority candidates are strongly encouraged to apply.

TWO POSITIONS, ASSISTANT/ASSOCIATE PROFESSOR

The University of Miami (UM) invites applications for two positions, a tenure-track Assistant and an Associate Professor to develop innovative experimental research programs in biological physics. The initiative is part of UM's current drive to develop novel research collaborations at the frontiers of physics, the life sciences, and medicine. The successful candidate(s) will develop a novel line of research within physics while helping the Department strengthen its connections to UM's research activities across the life and medical sciences. Candidates for the Assistant Professor position must have a Ph.D. in physics or a similar field, postdoctoral experience, a demonstrated record of research, and a strong commitment to quality undergraduate teaching in physics and its applications. Candidates for the Associate Professor position must have a Ph.D. in physics or similar field, postdoctoral experience, a demonstrated record of research and external funding as well as a strong commitment to quality undergraduate and graduate teaching in physics and its applications. The Physics Department is located within the University's highly attractive Coral Gables campus in the greater Miami area, and has wide-ranging research expertise as well as an established Ph.D. program. Applicants should arrange for curriculum vitae, a statement of research interests, and three letters of recommendation to reach the following address by December 15, 2008: **Prof. Neil Johnson, Search Committee Chair for Biological Physics, Department of Physics, University of Miami, P.O. Box 248046, Coral Gables, FL 33124. E-mail: njohnson@physics.miami.edu**. *UM is a young and vibrant private institution, and an Equal Opportunity/Affirmative Action Employer.*



University of Massachusetts Medical School

Faculty Positions Department of Neurobiology

The Department of Neurobiology, established as part of the unprecedented research expansion at the University of Massachusetts Medical School, has recently hired a group of outstanding faculty using invertebrate model systems to investigate the genetic and molecular mechanisms of brain function. This group is unique in that it crosses many boundaries in the use of invertebrate systems to study central and interrelated areas in neuroscience ranging from learning and memory, synapse plasticity, sensory transduction, glial cell biology and circadian rhythms. The new Department augments an already existing interdisciplinary Program in Neuroscience. The laboratories for the Department are housed on one floor of a new state-of-the-art, 340,000 sq ft research building.

We now solicit applications for additional tenure-track positions.

The Department seeks individuals of outstanding potential who are using invertebrate model systems, including *C. elegans* and *Drosophila*, as well as less conventional invertebrate species (e.g., *Apis mellifera* and *Tribolium castaneum*), to study the nervous system. Specific areas of emphasis include, but are not limited to, cellular and molecular neuroscience, developmental neuroscience, brain physiology, and behavior. The positions are highly competitive with regard to start-up funds, laboratory space, and salary. Rank will be commensurate with ability and experience.

Applicants should send a CV, statement of research interests, and names and addresses of three references to:

Dr. Vivian Budnik
Chair of Faculty Search Committee
Professor of Neurobiology
University of Massachusetts Medical School
364 Plantation Street
Worcester, MA 01605-2324

Visit Neurobiology at: <http://www.umassmed.edu/neurobiology/>

An Equal Opportunity/Affirmative Action Employer. Women and under-represented minorities are especially encouraged to apply.



Chair: Department of Biology University of Maryland, College Park

We seek a distinguished senior scientist with a vigorous research program, commitment to excellence in graduate and undergraduate education, and broad vision, experience, and energy to chair the Department of Biology in the College of Chemical and Life Sciences at the University of Maryland. Biology is a broadly based and cohesive department with research strengths in cellular biophysics, developmental biology, ecology, evolutionary biology, genomics, and neurobiology. Faculty research laboratories are located in the new Bioscience Research Building and adjoining Biology-Psychology Building. The department is a key participant in undergraduate and graduate programs that span the College and campus. Recruitment of both senior and junior faculty is expected as part of an ambitious drive to enhance the life sciences. These efforts are focused in the College on ecological sustainability, genomics, host-pathogen interactions, nanoscience/biomaterials, and sensory neuroscience, and at the campus level on broad initiatives in areas such as climate, energy, health, and nanoscience. For more information please visit www.chemlife.umd.edu.

Apply electronically to <http://chemlife.umd.edu/biologychairsearch.html> with an application letter and the following: (1) curriculum vitae, (2) statement of research interests, (3) statement of academic vision and administrative experience, and (4) names, addresses, emails and phone numbers of at least four references. Review of credentials will continue until the position is filled. Review of applications will begin on **November 3, 2008**.

The University of Maryland, College Park is the flagship campus of the University System of Maryland and one of the most rapidly advancing public research universities in the country. Close proximity to Washington, Baltimore, and the Maryland Biotechnology Corridor facilitates interactions with an extraordinary range of major research institutions, including the NIH, FDA, Smithsonian Institution and the USDA.

The University of Maryland is an Equal Opportunity Affirmative Action Employer. Minorities and women are encouraged to apply.

John B. Pierce Laboratory / Yale School of Medicine / Yale University

Systems Level Physiologist/ Neurophysiologist



The John B. Pierce Laboratory seeks a systems level physiologist or neurophysiologist conducting innovative research on hypothalamic regulatory mechanisms. The appointment will be made at the rank of Assistant Fellow or starting Associate Fellow. Co-appointment is anticipated at the equivalent rank of Assistant or Associate Professor at the Yale University School of Medicine. The successful candidate will join a multidisciplinary faculty with research interests that include the neural, behavioral, and physiological mechanisms of temperature sensitivity, fluid balance, food selection, reward, and metabolism. Now celebrating its 75th anniversary as a nonprofit laboratory dedicated to basic research in environmental physiology and health, the John B. Pierce Laboratory is an endowed institute, formally affiliated with Yale University since 1966, that makes both term and career appointments. Located immediately adjacent to the medical school campus, the Laboratory offers a unique, world-class collaborative research environment in which its faculty enjoys the added advantages of outstanding in-house technical, engineering, and design/build services, and independent business and administrative offices with exceptional grant support.

The Laboratory offers competitive salary, benefits, and start-up, as well as an outstanding work environment. Applicants should submit a CV, description of research interests, set of representative publications, and names of at least three references to: scientificsearch@jbpierce.org, or to: **Scientific Search, John B. Pierce Laboratory, Inc., 290 Congress Avenue, New Haven, CT 06519**. The search will begin on **October 1, 2008** and continue until the position is filled.

EOE/AA

www.jbpierce.org

POSITIONS OPEN



BIOMATHEMATICS

The Department of Biological Sciences, University of Wisconsin, Milwaukee (UWM) invites applicants for a faculty position at the **ASSISTANT (TENURE-TRACK) or ASSOCIATE PROFESSOR** level. We are seeking outstanding candidates with a Ph.D. in biology or a related area with postdoctoral research experience. Applicants whose work has an aquatic focus, and with expertise in biometrics, bioinformatics, genomics, computational biology, ecological modeling, systems biology, or biological aspects of climate modeling, are preferred. The successful candidate will be expected to develop a vigorous, externally funded research program, take an active role in directing undergraduate and graduate education, and contribute to teaching in biomathematics and core biology courses. This position complements a second position in mathematical sciences and is part of a new interdisciplinary research initiative in aquatic biomathematics, involving our two Departments and the UWM Great Lakes Wisconsin Aquatic Technology and Environmental Research Institute. Potential applicants are encouraged to visit our websites: <http://www.uwm.edu/Dept/Biology>, <http://www.math.uwm.edu>, and <http://www.glti.uwm.edu>. To apply, please go to website: <http://www.jobs.uwm.edu/applicants/Central?quickFind=50742>. A completed application should include: cover letter, curriculum vitae, statement of research goals, statement of teaching interests, and letters of professional reference. Applicants should arrange to have three letters of reference sent as PDF attachments to the **Departmental Chair (e-mail: sandgren@uwm.edu)** or mailed to **Biomathematics Search** at the following address: **Department of Biological Sciences, University of Wisconsin-Milwaukee, P.O. Box 413, Milwaukee, WI 53201**. Screening of candidates will begin November 19, 2008, and continue until the positions are filled. Appointments begin August 2009. *UWM is an Equal Opportunity/Affirmative Action Employer.*

RESEARCH ASSOCIATE (POSTDOCTORAL) Protein Expression

A Research Associate position is available immediately for a highly motivated protein scientist at Fraunhofer USA Center for Molecular Biotechnology in Newark, Delaware. The Center focuses on the development of vaccines and therapeutics in plant-based protein production systems. The successful candidate will primarily be involved in developing strategies to optimize the expression of foreign proteins in plants, with an emphasis on protein synthesis, folding, processing, stability, and extractability. Qualified applicants will have extensive experience in molecular biology, bioinformatics, protein engineering, and protein biochemistry. Applicants with a Ph.D. in life sciences, including fields such as biology, molecular biology, biochemistry, or bioinformatics, are encouraged to apply. Applicants must have good organizational, record-keeping, and computer skills and must be able to work in a team environment. Fraunhofer USA offers a competitive salary and benefit package.

Interested candidates should send their curriculum vitae and cover letter referencing the position applying for along with contact information for three references to **e-mail: personnel@fraunhofer-cmb.org**. For more information and additional career opportunities, please visit our website: <http://www.fraunhofer-cmb.org>.

Equal Opportunity Employer.

POSTDOCTORAL FELLOW at UCLA

Position is available to study the role of gender factors in immune responses and autoimmune diseases (**Smith-Bouvier D. et al., J. Exp. Medicine 205:1099, 2008**). The project involves knowledge of gene inactivation, sex chromosome, and immunology in mouse and/or humans. Start date January to August 2009. Contact **e-mail: rrsingh@mednet.ucla.edu**.

POSITIONS OPEN

BIOLOGY FACULTY POSITIONS University of South Florida

The Division of Integrative Biology/Department of Biology invites applications for two tenure-track faculty positions that will be part of a newly formed global change cluster in the School of Natural Sciences and Mathematics. A Ph.D. in biology or related field is required, and postdoctoral experience and evidence of an externally funded research program are desirable. Successful candidates for both positions will be expected to develop a strong externally funded research program, mentor graduate students, and teach undergraduate and graduate courses.

PLANT BIOLOGIST (ASSISTANT PROFESSOR level). We welcome candidates with research interests in any aspect of plant biology (including algae), from genes to ecosystems; especially those employing genetic tools.

SPATIAL ANALYSIS/ECOSYSTEMS (ASSISTANT/ASSOCIATE PROFESSOR level). We welcome candidates who focus on spatial analysis of ecological processes. Candidates already in tenure-track or tenured positions may be considered for the rank of Associate Professor.

Please submit the following: cover letter, curriculum vitae, statement of research and teaching interests, and three representative publications to: **Mary Parrish, Department of Biology, Division of Integrative Biology, University of South Florida, 4202 East Fowler Avenue, SCA110, Tampa, FL 33620**.

Also have three letters of recommendation in PDF sent to **e-mail: bioibsearches@cas.usf.edu**. Review of applications will begin on November 21, 2008. The position will be open until filled.

According to Florida law, applications and meetings regarding them are open to the public. For ADA accommodations, please contact **Mary Parrish, telephone: 813-974-6210** at least five working days prior to need. *USF is an Affirmative Action/Equal Employment Opportunity Institution.*

ASSISTANT PROFESSOR

Harvard University and Children's Hospital Boston

The Stem Cell Program at Children's Hospital Boston invites applications for an Assistant Professor position (tenure track). This position will be a joint appointment between Harvard University's newly established Department of Stem Cell and Regenerative Biology and the Stem Cell Program at Children's Hospital Boston. Both are affiliated with the Harvard Stem Cell Institute.

Candidates must hold a Ph.D. and/or M.D. Outstanding scientists with a demonstrated research interest in stem cells and regenerative biology/medicine will be given preference. This could include chromatin or transcriptional regulation, chemical biology, tissue regeneration, cancer, or disease models.

Applicants must submit an electronic copy of current curriculum vitae and a description of current and proposed research plans to **Leonard I. Zon, M.D., Director, Stem Cell Program at Children's Hospital Boston (e-mail: ckent@enders.tch.harvard.edu)** and should arrange to have three letters of recommendation mailed directly from the references to: **Search Committee, Leonard I. Zon, M.D., Stem Cell Program at Children's Hospital Boston, 300 Longwood Avenue, Karp 7.211, Boston, MA 02115**. Application review will continue until the position is filled. *Children's Hospital Boston and Harvard University are Equal Employment Opportunity Employers.*

Sonoma State University seeks a productive and dynamic **DIRECTOR** who will manage the 470-acre Fairfield Osborn Preserve and 3,670-acre Galbreath Wildlands Preserve. The successful candidate will support and develop environmental education, stewardship, outreach, research, and fundraising at the Preserves. Preferred start date: January 2009. Details at website: http://www.sonoma.edu/es/employment/job_opportunities.html.

POSITIONS OPEN



THE UNIVERSITY OF CHICAGO

The Physical and Biological Sciences Divisions in conjunction with the Computation Institute seek a **COMPUTATIONAL NEUROSCIENTIST** with a strong applied mathematics background. We seek an outstanding quantitative scientist who has demonstrated collaborative interactions with experimental neuroscientists. The candidate should complement our strengths in statistics, computation, and neuroscience. Candidates at all faculty levels will be considered. This position will likely be shared by two or more departments.

Applications should be submitted, preferably by e-mail, to **e-mail: compneurosearch@bsd.uchicago.edu**, or by regular mail to: **Chair, Computation Neuroscience Search Committee, c/o Jo DeGroot, Department of Neurobiology, 947 East 58th Street, Chicago, IL 60637**. Applications should include curriculum vitae, with a complete list of publications and a statement of research and teaching interests. Candidates should have three letters of recommendation sent to the same address. *The University of Chicago is an Equal Opportunity/Affirmative Action Employer.*

EVOLUTIONARY BIOLOGY or EVOLUTIONARY ECOLOGY ASSISTANT PROFESSOR University of Michigan

The Department of Ecology and Evolutionary Biology at the University of Michigan invites applications for a tenure-track Assistant Professor position in evolutionary biology or its intersection with ecology. The position will have a university-year appointment. We seek outstanding individuals with research and teaching interests in any area of evolutionary biology or evolutionary ecology; including evolutionary and ecological genetics and genomics, population and quantitative genetics, phylogenetics of communities, evolutionary theory, phylogenetics, and evolution of morphology, function, and behavior. For further information, please see website: <http://www.ecb.lsa.umich.edu>.

To apply, please provide: complete curriculum vitae, statements of current and future research plans and teaching philosophy and experience, evidence of teaching excellence, copies of publications, and arrange to have three letters of recommendation sent to: **Evolutionary Biology Search Committee, Department of Ecology and Evolutionary Biology, 830 N. University, 2019-S Kraus Building, University of Michigan, Ann Arbor, MI 48109-1048** or to **e-mail: ecbsearch@umich.edu**. Review of applications will begin on November 15, 2008, and continue until a suitable candidate is identified. *Women and minorities are encouraged to apply, and the University is supportive of the needs of dual-career couples. The University of Michigan is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION

A Postdoctoral position is immediately available for a highly motivated individual to study genetic and epigenetic changes in breast cancer progression and metastasis. Current projects include (1) investigation of the functional role and therapeutic application of the PIK3CA gene in breast cancer and (2) investigation of novel genes in breast cancer metastasis. Competitive applicants should have obtained their Ph.D. not more than three years ago, have peer-reviewed publications, and be well-trained in cancer genetics, and molecular biology. Experience handling mice is preferred. Qualified candidates should send their curriculum vitae, including contact information for three references, to: **Guojun Wu, Ph.D., Karmanos Cancer Institute, Wayne State University, 4100 John R, Mail Code HW08AO, Detroit, MI 48082 U.S.A. E-mail: wugu@karmanos.org**.

Boston University School of Medicine

Boston University School of Medicine welcomes applications for its departments below at ranks of Instructor, Assistant & Associate Professor, or Professor.

- **Anatomy & Neurobiology**
- **Biochemistry**
- **Microbiology**
- **Physiology & Biophysics**
- **Pharmacology & Experimental Therapeutics**
- **Pathology**

Email a cover letter specifying your department of interest with your CV to busmdean@bu.edu.

Boston University is an equal opportunity and affirmative action employer



www.bumc.bu.edu



Federal University of Rio Grande do Norte Edmond and Lily Safra International Institute of Neuroscience of Natal

The Federal University of Rio Grande do Norte (UFRN) and the Edmond and Lily Safra International Institute of Neuroscience of Natal (ELS-IINN) are proud to announce the opening of four (4) faculty positions to join a new Department of Neuroscience at UFRN/ELS-IINN. In 2008 UFRN celebrates 50 years of commitment to research and education in northeastern Brazil, one of the poorest regions of the country (www.ufrn.br). The ELS-IINN is a world renowned center for biomedical research and scientific education, with the unique mission of using cutting-edge science to promote social change in northeastern Brazil (www.natalneuro.org.br). Public contests will be held to recruit two (2) Full Professors and two (2) Assisting Professors. All faculty positions grant medical & labor benefits, and are tenured by the Federal Government with a single confirmatory evaluation three years after hiring. Each recruited candidate will participate in the management of a start-up fund of 500,000 reais (~280,000 USD by September 12, 2008 exchange rate) provided by the Federal Government to purchase equipment and supplies. Outstanding and enthusiastic neuroscientists with idealism, initiative and leadership are sought in the following fields:

Systems neuroscience: (2 Full Professor and 1 Assisting Professor positions): Multielectrode physiology (extracellular and intracellular), microstimulation, optical imaging, photo-uncaging of neuroactive compounds, rhodopsin transgenic mice;

Molecular neuroscience: (1 Assisting Professor position): RNAi, in situ hybridization, DNA array, stem cells, transgenic models.

Applicants must provide the following documents: *registration fee payment slip, registration form, copy of passport, curriculum vitae with supporting documents, copy of graduation diploma and three copies of a Career Memorial*, as described on the Registration Guide. Please refer to ciencia@natalneuro.org.br for more information and to request the Registration Guide. For Full Professor positions, materials should be posted until **November 8, 2008**. For Assisting Professor positions, materials will be received until **February 2, 2009**.

Jose Ivonildo do Rego, Ph.D., President of UFRN
Miguel A.L. Nicolelis, M.D., Ph.D., Presidente of ELS-IINN
Department of Neuroscience Search Committee

Washington University in St. Louis SCHOOL OF MEDICINE

Faculty Position in Structural Biology

The DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOPHYSICS at Washington University School of Medicine invites applications for a tenure-track or tenured faculty position in the area of Structural Biology. Applicants at the Assistant, Associate, or Full Professor level will be considered. The successful candidate will conduct independent research within a growing department that is broadly represented in quantitative studies of macromolecules, including X-ray and NMR studies of protein structure and dynamics, macromolecular interactions, mechanistic enzymology, and computational analyses and modeling (<http://www.biochem.wustl.edu>). Priority will be given to candidates using integrated approaches to the study of macromolecular structure and biological function(s). Enthusiasm for teaching and mentoring research trainees is important.

Washington University has a highly interactive research environment with vigorous interdisciplinary graduate and medical scientist training programs. Selection of candidates will begin in **November 2008**. Minority and women scientists are especially encouraged to apply. Applicants should submit their curriculum vitae, selected reprints, a short summary of future research plans and the names of references electronically to: structure-search@biochem.wustl.edu or else by mail to:

STRUCTURAL BIOLOGY SEARCH

Tom Ellenberger, Raymond H. Wittcoff Professor and Head
Department of Biochemistry and Molecular Biophysics
Washington University School of Medicine
660 S. Euclid Ave., Box 8231
St. Louis, MO 63110

AN EQUAL OPPORTUNITY EMPLOYER.



Faculty Position Department of Pharmaceutical Sciences Wilkes University Nesbitt School of Pharmacy

Wilkes University invites applicants for a 9-month tenure-track faculty position in pharmacology at the Assistant/Associate rank in the Department of Pharmaceutical Sciences. Wilkes University is an independent institution of higher education with approximately 2,200 undergraduate and 2,000 graduate students located in Wilkes-Barre, Pennsylvania, a mid-sized city within two and one-half hours driving distance of New York City and Philadelphia. The Nesbitt School of Pharmacy accepts sixty-five applicants into the professional program each year and currently has eight science faculty.

The successful candidate will participate in the training of professional pharmacy students in pharmacology. The candidate will be an important member of a team of scientists and clinicians that are responsible for the four-semester sequence of courses (28 credit hours) in pharmacotherapy. They will also be asked to develop professional elective(s) and develop a modest research program.

Minimum requirements are a Ph.D. in Pharmacology or a closely related discipline and the ability to communicate clearly and effectively. Preference will be given to candidates who have a record of high quality teaching at the undergraduate level and the interpersonal skills necessary to interact effectively with other faculty, students, staff, and external constituencies. An offer of employment is dependent on a candidate's ability to provide proof of eligibility to work in the United States. Salary is commensurate with qualifications and experience. Send a letter of interest, a full curriculum vitae, and the names, addresses, and telephone numbers of at least three individuals who may be contacted for a confidential reference, to **Wilkes University, Pharmacologist Search, Reference # (Position Code) PHS001, PO Box 3924, Scranton, PA 18505-0924**. Indicate the reference # on the envelope. To apply by email, send application materials to: eapply@wilkes.edu and indicate the reference # in the email subject line. Kindly indicate in your letter where you found out about the position vacancy. **Please make sure to include the reference # or the application will not be processed.**

Wilkes University is an Equal Opportunity Employer committed to a diverse faculty, staff and student body. Applicants from diverse backgrounds are strongly encouraged to apply.

POSITIONS OPEN



ASSISTANT/ASSOCIATE PROFESSOR of BIOMEDICAL SCIENCE

The Charles E. Schmidt College of Biomedical Science is seeking a tenure-track/tenured faculty member (position #980694) in the Department of Basic Science. The candidate will have a Ph.D., M.D. or equivalent degree and a demonstrated ability to conduct innovative research in biophysics and/or structural biology and experience in teaching general physiology. The faculty member will establish an externally funded research program that complements the research of current faculty and will teach in both college graduate programs and in the Medical Education Program of the regional campus of the University of Miami Miller School of Medicine (located at Florida Atlantic University) including facilitating small groups in a problem-based learning (PBL) curriculum. The position includes startup funds and a 12-month salary. Application materials must be submitted electronically including: cover letter, curriculum vitae, a one-page summary of research interests, a one-page statement of teaching experience and philosophy, and the names of three references to **website: <https://jobs.fau.edu>** by October 31, 2008. For information about the College, please see our **website: <http://biomed.fau.edu/biomedical>**. *Florida Atlantic University is an Equal Opportunity/Equal Access Institution.*

PLANT ECOLOGIST

The Department of Plant Biology at Michigan State University (MSU) invites applications for an **ASSISTANT PROFESSOR** (tenure track) who conducts research in any area of plant ecology. The successful applicant will contribute to undergraduate teaching, develop a graduate course in his or her area of expertise, participate in the Graduate Program in Ecology, Evolutionary Biology, and Behavior (**website: <http://www.msu.edu/~cebb>**), and maintain an externally funded research program. Applicants must have a Ph.D., and postdoctoral research experience is desirable. Applications should include curriculum vitae, a summary of research accomplishments and future research objectives, a brief description of teaching philosophy and goals, and three letters of reference. Information about the Department of Plant Biology can be found at **website: <http://www.plantbiology.msu.edu>**. Review of applications will begin November 17, 2008, and will continue until a suitable candidate is identified. Application materials can be sent electronically to **e-mail: ecology@msu.edu**. *MSU is an Affirmative Action, Equal Opportunity Employer. MSU is committed to achieving excellence through cultural diversity. The University actively encourages applications and/or nominations of women, persons of color, veterans, and persons with disabilities.*

POSTDOCTORAL RESEARCHER POSITIONS Biochemistry and Physiology Davis Heart and Lung Research Institute The Ohio State University

We are seeking a Postdoctoral Researcher with biochemistry, molecular biology, or proteomics experience to study nitric oxide synthase and related enzymes and their posttranslational modifications in cardiovascular disease.

A position is also available for a Postdoctoral Researcher with experience in cardiac physiology to study free radical and nitric oxide formation and related mechanisms of post ischemic injury. Experience with isolated in vivo models desired.

Salary will be commensurate with experience. Please submit curriculum vitae and list of references to: **Jay L. Zweier, M.D., e-mail: jay.zweier@osumc.edu** for consideration. *OSU is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

CHEMISTRY and BIOCHEMISTRY FACULTY POSITION University of California, Los Angeles (UCLA)

The Department of Chemistry and Biochemistry at UCLA invites applications for a faculty position in all areas of chemistry, biochemistry, and chemical biology. The search is open to both junior and senior level candidates. Applicants are expected to have earned a Ph.D. degree in chemistry, biochemistry, or an allied field and to be strongly committed to both teaching and research. Successful applicants will show evidence of exceptional originality and promise, and aspire to establish a world-class research program in a stimulating environment that fosters collaboration and community. Candidates must give evidence of exceptional promise (for a junior appointment) or great distinction (for a senior appointment) in research and teaching. Applications should include curriculum vitae, a statement of research accomplishments and description of proposed research (not exceeding four pages), reprints of representative publications, and a list of professional references. Junior faculty applicants should arrange to have at least three letters of recommendation sent at the time of application. To assure consideration, all application materials should be received by November 15, 2008, and directed to:

**Chair
Search Committee
Department of Chemistry and Biochemistry
University of California, Los Angeles
P.O. Box 951569
Los Angeles, CA 90095-1569**

UCLA is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.

FACULTY POSITION in CHEMISTRY University of California, Berkeley Department of Chemistry

The Department of Chemistry at the University of California (UC), Berkeley invites applications for an **ASSISTANT PROFESSOR** faculty position beginning in the 2009 academic year. We will consider creative and energetic candidates who show extraordinary promise or accomplishment in research and teaching in any area of chemistry.

Applicants should send curriculum vitae and a proposed research program, and arrange to have three letters of recommendation sent to:

**Chair, Faculty Recruitment Committee
Department of Chemistry
419 Latimer Hall
University of California
Berkeley, CA 94720-1460**

or
e-mail: chemdept.recruit@berkeley.edu

or electronic submissions preferred via candidate self-registration at **website: <http://chem-dept.berkeley.edu:80/sReg.php?i=56>**.

The link above allows candidates to register and upload application material. Once application materials have been uploaded, candidates will be given a URL where their references may upload PDFs of their letters. Please refer references to the UC statement on confidentiality, **website: <http://apo.chance.berkeley.edu/evaltr.html>**. The deadline for receipt of application material is November 15, 2008. Application review will begin in the fall of 2008. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOWSHIPS to study oocyte maturation (Zhang et al., *Dev. Cell* 15:386-400, 2008). We are equipped with in-laboratory facilities for time-lapse confocal imaging of both frog and mouse oocytes. Please send curriculum vitae, a brief statement of accomplishment/experience, and names of three references to: **Dr. Johné Liu, Ottawa Health Research Institute, 725 Parkdale Avenue, Ottawa, K1Y 4E9, Canada. E-mail: jliu@ohri.ca; website: <http://www.ohri.ca/profiles/liu.asp>**.

POSITIONS OPEN



VERTEBRATE ANATOMIST

Assumption College invites applicants for a tenure-track position at the **ASSISTANT PROFESSOR** rank, starting August 2009. Primary teaching responsibility is mammalian anatomy, with shared responsibility for introductory biology courses. Our new science building includes dedicated space for student-faculty research. Ph.D. and a commitment to undergraduate teaching and research required. Postdoctoral research experience preferred. Applicants must be willing to contribute actively to the mission of the College as well as show respect for the Catholic and Assumptionist identity of Assumption College. Send curriculum vitae, statements of teaching philosophy and research interests, graduate and undergraduate transcripts, and three letters of recommendation to: **Steven Theroux (e-mail: stheroux@assumption.edu), Department of Natural Sciences, Assumption College, 500 Salisbury Street, Worcester, MA 01609-1296** by December 10, 2008 (**website: <http://www.assumption.edu/programs/NatSci>**). *Assumption College, a Catholic liberal arts and professional studies college, was founded in 1904 by its sponsoring religious community, the Augustinians of the Assumption. Assumption College is a member of the Colleges of Worcester Consortium and an Affirmative Action Employer encouraging candidates who would enrich the College's diversity.*

TENURE-TRACK ASSISTANT PROFESSOR Microbiology

The Department of Biological Sciences at Barnard College, Columbia University, seeks a full-time, tenure-track Assistant Professor (starting July 2009) to participate in undergraduate teaching and establish an active, externally funded research program that investigates any aspect of the biology of microbes. Before applying, please see **website: <http://www.barnard.edu/biology/microjob.htm>**.

Teaching responsibilities include advanced lecture and laboratory courses in microbial diversity, participation in the introductory biology sequence, and organization of a senior seminar in an area of interest to the successful candidate. Ph.D. and postdoctoral experience is required; teaching experience is desirable.

Applicants should send curriculum vitae, research and teaching statements, three representative publications, and three letters of recommendation to: **Microbiology Search Committee, Department of Biological Sciences, Barnard College, 3009 Broadway, New York, NY 10027 (e-mail: biologyjob@barnard.edu)**. Review of applications will begin November 1, 2008.

Barnard College is an Equal Opportunity Employer. Women and members of underrepresented minorities are encouraged to apply.

RESEARCH FACULTY POSITION

The Department of Urology at the University of Pittsburgh seeks tenure-track and nontenure-track faculty at all ranks in the area of prostate and urologic cancer. The successful candidate will also participate at the Prostate and Urologic Cancer Program of the University of Pittsburgh Cancer Institute. Candidates must possess a Ph.D. and/or M.D. degree with productive postdoctoral training in the area of cancer biology or related fields. Successful applicants will be expected to develop a vigorous research program with the potential for extramural funding. We offer competitive academic salary, fringe benefits, and state-of-the-art facilities for both basic and translational research. Positions available until filled. Applicants should send a letter describing their research interest, curriculum vitae, and the names of at least three persons from whom references can be obtained to: **Vinnette Sommariva, University of Pittsburgh School of Medicine, Department of Urology, Shadyside Medical Center, 5200 Centre Avenue, Suite G40, Pittsburgh, PA 15232**. *The University of Pittsburgh is an Affirmative Action, Equal Opportunity Employer.*



THE UNIVERSITY OF CHICAGO

The University of Chicago/Department of Radiation and Cellular Oncology and the Ludwig Center for Metastasis Research is seeking applicants for full time **Research Associate** (Asst. Prof. – Prof.), all ranks. The primary activity of a Research Associate is research in association with a faculty member or team. Candidates are required to possess a doctorate degree and prior research experience in the field of **Immunology as it applies to radiation therapy and the treatment of metastasis**. Compensation is dependent on qualifications. The University provides a generous package of fringe benefits.

Interested candidates should submit a curriculum vitae, bibliography, a statement of research, and contact information for three professional references to: **Dr. Ralph R. Weichselbaum in C/O Janet Riley, Department of Radiation and Cellular Oncology, 5758 S. Maryland Ave. MC9006, Chicago, IL, 60637** or via email to: **Jriley@radonc.uchicago.edu**. For information about the University of Chicago please consult: **<http://uchicago.edu>**.

Screening of applicants will continue until the positions are filled.

*The University of Chicago is an
Affirmative Action Equal Opportunity Employer.*



Yale University Richards Center for Molecular Biophysics

Yale University announces an exciting opportunity for three highly qualified biophysics research support specialists to establish, oversee and manage the newly created '**Richards Center for Molecular Biophysics**'. The Center will provide support for students, postdocs and faculty who use a variety of biophysical methods to characterize the structure and interactions of biological macromolecules and will include instrumentation for x-ray crystallography, solution spectroscopies such as CD, fluorescence and NMR, ultracentrifugation, mass spectroscopy, surface plasmon resonance and robotics for automated cloning and protein purification. It is expected that the three individuals will work together to manage and provide team support for center resources and users. Candidates should hold a Ph.D. in an appropriate discipline, or have equivalent work experience. Expertise in multiple areas of biophysics will be viewed as an advantage. Key responsibilities will include managing proper use and maintenance of instrumentation, supporting faculty grant applications that use center instruments, recommending methods for users, instructing new users, establishing tutorials and implementing workshops for students and post-docs, and working with researchers to optimize instrument performance, and to acquire and analyze data. Both technical expertise and an enthusiasm for interacting with a variety of different users and participating in a diverse array of research projects are essential.

Application: For more information and immediate consideration, please apply online at **www.Yale.edu/jobs** - the STARS req IDs for these positions are **5746BR, 5750BR, 5751BR**. Please be sure to reference source code PSCIC. Review of applications will begin on **November 15, 2008** and continue until the positions are filled.

*Yale University is an Affirmative Action/Equal Opportunity Employer.
Yale values diversity in its faculty, staff, and students and
strongly encourages applications from women and members of
underrepresented minority groups.*

A Career in science is more than just science.

www.sciencecareers.org

Science Careers

From the journal *Science*



QUANTITATIVE BIOLOGY or BIOINFORMATICS

The Department of Biology at the University of North Carolina at Chapel Hill invites applications for a tenure-track Assistant Professor in Quantitative Biology or Bioinformatics. We seek a researcher who is applying quantitative and/or computational methods to the study of molecular, cellular or developmental systems. Examples of appropriate specializations include, but are not limited to, the study of physical processes within the cell, developmental processes unfolding at multiple scales, and the use of genomic data to study the biology of microbial communities. Research may or may not be purely computational. The successful candidate will contribute to a new initiative in Quantitative Biology and be affiliated with the NIH-funded graduate Curriculum in Bioinformatics and Computational Biology (**<http://beb.unc.edu>**). Submit a cover letter, CV, research and teaching statements, and optionally one additional supporting document online at **<http://hr.unc.edu/jobseekers>** (1001095). At least four letters of reference are required. Electronic copies should be sent to **BioInfoSearch@bio.unc.edu** and signed hardcopies to: **Quantitative Biology Search Committee, Department of Biology, CB#3280, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3280**. For inquiries, please contact **Dr. Todd Vision** (**tjv@bio.unc.edu**; 919-843-4507) or **Dr. Jason Lieb** (**jlieb@bio.unc.edu**; 919-843-3228). Review of applications will begin **November 19, 2008**. The position will be effective on or after July 1, 2009 and will remain open until filled. The successful candidate must have a Ph.D. in Biology, Applied Math, Computer Science, or related field by the effective date. *The University of North Carolina is an Equal Opportunity Employer.*

FACULTY POSITION IN X-RAY CRYSTALLOGRAPHY

Department of Biochemistry and
Molecular Biology
Thomas Jefferson University

The Department of Biochemistry and Molecular Biology at Thomas Jefferson University in Philadelphia invites applications for tenure-track or tenured faculty positions in the areas of X-ray crystallography of proteins or nucleic acids. We seek outstanding established investigators with demonstrated research excellence and a solid track record of extramural funding. The Department offers a highly collaborative culture and provides state-of-the-art facilities for advanced structural biology and biophysical work. The successful candidate is expected to establish a dynamic and independently funded research program and participate in graduate training at the interface between biology, biochemistry, and biophysics.

Applicants should submit a curriculum vitae, a brief statement of research interests and future plans, and names of at least three references to: **Professor Ya-Ming Hou, Thomas Jefferson University, Department of Biochemistry and Molecular Biology, 233 South 10th Street, BLSB 220, Philadelphia, PA 19107**. Email: **ya-ming.hou@jefferson.edu**.

Thomas Jefferson University is located in center city Philadelphia, adjacent to a variety of cultural, entertainment and historical attractions. Affirmative Action/Equal Opportunity Employer.



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POSITIONS OPEN

FACULTY POSITION in COMPUTATIONAL BIOPHYSICS

Johns Hopkins University

The Thomas C. Jenkins Department of Biophysics seeks candidates for a tenured faculty position in computational biophysics. We are particularly interested in candidates with a background in physics and expertise in statistical thermodynamics, physical chemistry, and polymer physics, and with interests in the application of computational methods to the structure and function of biological macromolecules, their assemblies and regulatory interactions and networks.

Please send, by 15 December 2008, a cover letter, curriculum vitae, and a brief description of your research plans to: **Faculty Search Committee, T.C. Jenkins Department of Biophysics, Johns Hopkins University, 3400 N. Charles Street, Baltimore, MD 21218-2685; telephone: 410-516-7245.** Candidates should arrange for three letters of reference to be sent to the same address.

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ANNOUNCEMENTS

U.S. POSTAL SERVICE

Statement required by the Act of 12 August 1970, Section 3685, Title 39, United States Code, showing the ownership, management, and circulation of:

1-9. *Science*, Publication No. 0036-8075, is published weekly on Friday, except the last week in December, at 1200 New York Ave., N.W., Washington, DC 20005. Date of filing: 26 September 2008. This is also the address of the publisher, the editor, and the managing editor, who are, respectively, Beth Rosner, Bruce Alberts, and Monica M. Bradford.

10. The owner is the American Association for the Advancement of Science, 1200 New York Ave., N.W., Washington, DC 20005. Stockholders: None.

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I certify that the statements made above are correct and complete. (signed) Beth Rosner, Publisher.

POSITIONS OPEN

ASSISTANT PROFESSOR of ENVIRONMENTAL SCIENCE and POLICY, Clark University. The Department of International Development, Community, and Environment seeks to fill a tenure-track position in its Environmental Science and Policy Program. The candidate will teach undergraduate and graduate courses in such areas as: epidemiology, public health policy, environmental and community health, and global health. A disciplinary or interdisciplinary doctoral degree with a focus on health and environment, a strong background in science, and a demonstrated interest in policy and social change are required.

For more information visit our website: <http://www.clarku.edu/idce>.

FACULTY POSITION in BIOCHEMISTRY University of California, San Diego

The Department of Chemistry and Biochemistry of University of California, San Diego ([website: http://www-chem.ucsd.edu](http://www-chem.ucsd.edu)) invites applications for a tenure-track faculty position in biochemistry. Candidates must have a Ph.D. and a demonstrated ability for creative research and teaching at the undergraduate and graduate levels. The Department will consider applicants who are researching significant biological problems using interdisciplinary methods, including but not limited to biochemical, biophysical, and computational techniques. Of particular interest are candidates whose research is focused on exploring how biological systems are influenced by the environment. Salary is commensurate with qualifications and based on University of California pay scale. Applicants are asked to submit materials online at [website: http://www-chem.ucsd.edu/recruit/index.cfm?addno=5-120](http://www-chem.ucsd.edu/recruit/index.cfm?addno=5-120). Materials include a cover letter, curriculum vitae, research proposal, samples of published research, and a statement of teaching experience. Applicants are welcome to include in their cover letters a personal statement summarizing their contributions to diversity. Please arrange for three reference letters to be mailed to: **Chair, Biochemistry Search Committee 5-120, University of California, San Diego, Department of Chemistry and Biochemistry, La Jolla, CA 92093-0332.** The deadline for applications is December 1, 2008. Applications received after this deadline will be given full consideration if the position has not been filled. *UCSD is an Equal Opportunity/Affirmative Action Employer with a strong institutional commitment to the achievement of diversity.*

BULLARD FELLOWSHIPS in FOREST RESEARCH Harvard University

Each year Harvard University awards a limited number of Bullard Fellowships to individuals in biological, social, physical, and political sciences to promote advanced study, research, or integration of subjects pertaining to forested ecosystems. The Fellowships, which include stipends up to \$40,000, are intended to provide individuals in midcareer with an opportunity to utilize the resources and to interact with personnel in any department within Harvard University in order to develop their own scientific and professional growth. In recent years, Bullard Fellows have been associated with the Harvard Forest, Department of Organismic and Evolutionary Biology, and the J. F. Kennedy School of Government and have worked in areas of ecology, forest management, policy, and conservation. Fellowships are available for periods ranging from six months to one year after September 1. Applications from international scientists, women, and minorities are encouraged. Fellowships are not intended for graduate students or recent postdoctoral candidates. Information and application instructions are available on the Harvard Forest [website: http://www.harvardforest.fas.harvard.edu](http://www.harvardforest.fas.harvard.edu). Annual deadline for applications is February 1.

POSITIONS OPEN

ENVIRONMENTAL RESEARCH ANALYST. Conduct research and analyze commercial land for potential development with emphasis on environmental effects including physical and health hazards. Analyze data to interpret correlations between commercial property development and environmental effects. Prepare reports to present to city, state, and federal authorities for permits. Conduct feasibility studies for development of physical plants. Review plans, designs, layout, and physical requirements for commercial sites and buildings. Required: Master of Science in chemical engineering, chemistry, or forestry. Equivalent of 40 hours per week. Job/interview site: Torrance, California. Send curriculum vitae to: **Person Realty Incorporated, 21641 S. Western Avenue, Suite C, Torrance, CA 90501.**

SHULL FELLOWSHIP at the Oak Ridge National Laboratory (ORNL): the Neutron Sciences Directorate of the ORNL invites applications for the Clifford G. Shull Fellowship. The Shull Fellowship provides an exciting opportunity to pursue research applying neutron scattering methods to forefront problems in physics, chemistry, biology, or materials science and engineering. Applications for Shull Fellowships commencing in 2009 are now being accepted. To receive full consideration applications must be submitted by December 12, 2008. For more information, and to apply, go to [website: http://jobs.ornl.gov/index.cfm](http://jobs.ornl.gov/index.cfm). ORNL is an Equal Opportunity Employer, committed to workforce diversity. Applicants need not be U.S. citizens.

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