

NINDS / AUPN / ANA / CNS

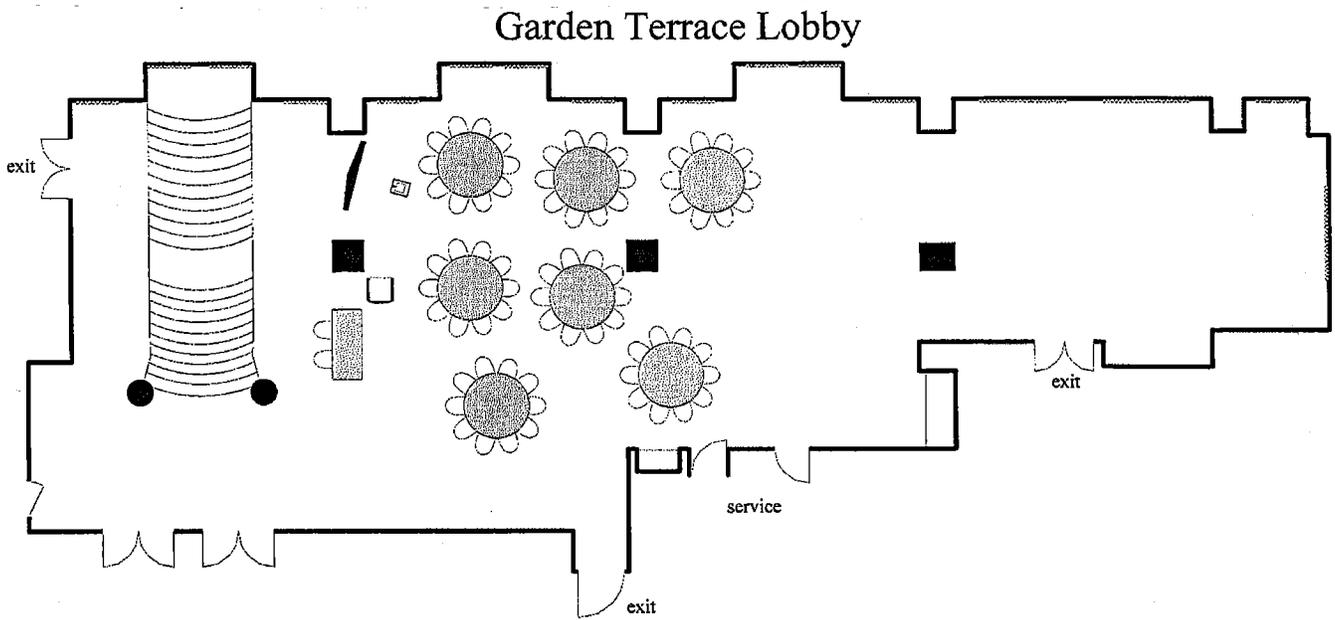
June 27-28, 2014 • JW Marriott • Washington, DC

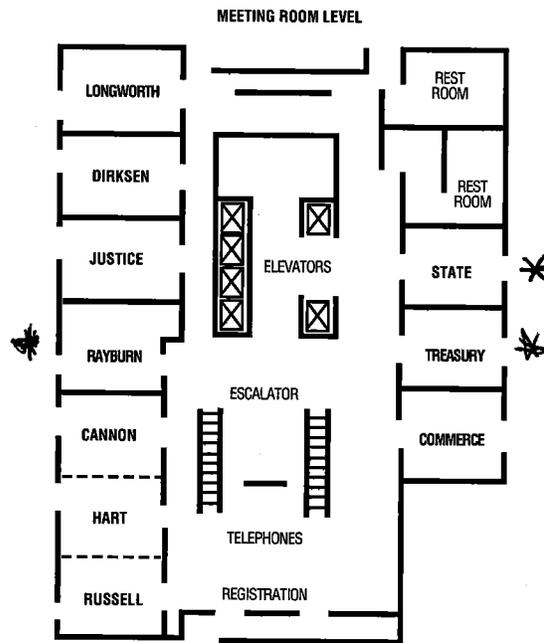
Combining Clinical and Research Careers in Neuroscience



Penn Avenue Terrace

Meetings and meals with take place here. The map for small breakout groups is following this map.





3:15 – 3:50

Small Group Breakouts

- Group 1: MEETING ROOM: Treasury
- Group 2: MEETING ROOM: State
- Group 3: MEETING ROOM: Rayburn
- Group 4: MEETING ROOM: Penn Avenue Terrace A
- Group 5: MEETING ROOM: Penn Avenue Terrace B

3:50-4:30 p.m.

Small Group Breakouts

- Group 1: MEETING ROOM: Rayburn
- Group 2: MEETING ROOM: Treasury
- Group 3: MEETING ROOM: State
- Group 4: MEETING ROOM: Penn Avenue Terrace B
- Group 5: MEETING ROOM: Penn Avenue Terrace A

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JW Marriott/Washington, DC/June 27-28, 2014*

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Association of
University Professors
of Neurology



CHILD NEUROLOGY SOCIETY

HOW TO COMBINE CLINICAL AND RESEARCH CAREERS IN NEUROSCIENCE

The Association of University Professors of Neurology (AUPN) together with the National Institute of Neurological Disorders and Stroke (NINDS), the American Neurological Association (ANA) and the Child Neurology Society (CNS) welcome you to the clinician-scientist mentoring course.

Goals: The goals of this course are to: 1) encourage medical students with neuroscience research training to pursue clinical training (with special emphasis on neurology) and choose clinician-scientist careers, 2) describe and discuss strategies for successfully melding clinical and research careers, 3) discuss the satisfactions and power of a combined research and clinical career, 4) describe and discuss sources of and strategies for obtaining training and research support, and 5) provide an opportunity for students to meet academicians who have successfully combined clinical and research careers in neuroscience.

Expectations: We are interested to know the impact of this course on the career-development experience of our student attendees. To this end we must collect both immediate and long-term information about our student participants. This information will help us justify federal support for future mentoring courses and will allow us to modify the program to be maximally responsive to student needs. Please give us your feedback. We are counting on a 100% response rate to the brief questionnaires you will receive via email following the course.

Bruce R. Ransom, MD, PhD
Symposium Organizer

David J. Fink, MD
President, AUPN

Story Landis, PhD
Director, National Institute of Neurological Disorders and Stroke
National Institutes of Health



Association of
**University Professors
of Neurology**



CHILD NEUROLOGY SOCIETY

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Symposium Organizer, University of Washington

David J. Fink, MD

President, AUPN, University of Michigan

Stephen J. Korn, PhD

National Institute of Neurological Disorders and Stroke
National Institutes of Health, Bethesda

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of Neurology



CHILD NEUROLOGY SOCIETY

COMBINING CLINICAL AND RESEARCH CAREERS IN NEUROSCIENCE SYMPOSIUM

*JW Marriott Washington DC
1331 Pennsylvania Avenue NW
Washington, DC 20004
Friday, June 27 – Saturday, June 28, 2014*

Sponsored by: National Institute of Neurological Disorders and Stroke (NINDS), Association of University Professors of Neurology (AUPN), American Neurological Association (ANA) and Child Neurology Society (CNS).

AGENDA

Friday, June 27, 2014 – Meeting and meals will take place in Penn Avenue Terrace, Lobby Level

- 6:30 - 7:30 p.m. **Registration and Cocktail Reception**
- 7:30 - 7:45 p.m. **Welcome and Opening Remarks**
Bruce R. Ransom, MD, PhD, University of Washington
- 7:45 - 8:45 p.m. **Dinner**
- 8:45 - 9:15 p.m. **Combining Clinical and Research Careers: How I Am Doing It**
Lesli E. Skolarus, MD, University of Michigan

Saturday, June 28, 2014 – Meeting and meals will take place in Penn Avenue Terrace, Lobby Level

- 8:30 - 9:15 a.m. **Registration and Continental Breakfast**
- 9:15 - 10:00 a.m. **Combining Clinical and Research Careers in Neuroscience: An Overview**
Bruce R. Ransom, MD, PhD, University of Washington
- 10:00 - 10:45 a.m. **Residency Training and Beyond: Transitions and Career Vulnerability**
David J. Fink, MD, University of Michigan
- 10:45 - 11:00 a.m. **Break**
- 11:00 – noon **Panel Discussion**
Moderated by: Bruce R. Ransom, MD, PhD, University of Washington
Panelists: David J. Fink, MD, University of Michigan; Suman Jayadev, MD, University of Washington; Stephen J. Korn, PhD, NINDS; Christina M. Marra, MD, University of Washington; Lesli E. Skolarus, MD, University of Michigan.

noon - 1:30 p.m. **Networking Lunch**

1:30 - 2:15 p.m. **Funding for Research Training and Career Development**
Stephen J. Korn, PhD, NINDS

2:15 - 3:00 p.m. **Physician-Scientist: Career and Family: Can You Have It All?**
Christina M. Marra, MD, University of Washington School of Medicine

3:00 - 3:15 p.m. **Break**

Meeting Room Assignments for Small Group Breakouts

Breakout Group Facilitators: Bruce R. Ransom, MD, PhD, University of Washington; David J. Fink, MD, University of Michigan; Suman Jayadev, MD, University of Washington; Stephen J. Korn, PhD, NINDS; Christina M. Marra, MD, University of Washington; Lesli E. Skolarus, MD, University of Michigan; Tom Lloyd, MD, PhD, Johns Hopkins School of Medicine; Richard J. O'Brien, MD, PhD, Johns Hopkins School of Medicine

3:15 – 3:50 **Small Group Breakouts**
Group 1: MEETING ROOM: Treasury
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Group 5: MEETING ROOM: Penn Avenue Terrace B

3:50-4:30 p.m. **Small Group Breakouts**
Group 1: MEETING ROOM: Rayburn
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Group 5: MEETING ROOM: Penn Avenue Terrace A

4:30 - 6:30 p.m. **Final Cocktail Reception (Penn Avenue Terrace)– hors d'oeuvres will be served**



Association of
University Professors
of Neurology



CHILD NEUROLOGY SOCIETY

CCRC COURSE BREAKOUT ROOM ASSIGNMENTS

Last Name	First Name	Break Out Group	Meeting Room 3:15-3:50	Meeting Room 3:50-4:30
Ahmed	Ishrat	1	Treasury	Rayburn
Alawieh	Ali	3	Rayburn	State
Alberto	Greg	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Andersen	Brian	2	State	Treasury
Athonvarangkul	Diana	3	Rayburn	State
Briggs	Stephen	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Carrell	Samuel	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Chesser	Adrienne	1	Treasury	Rayburn
Dabrowski	Anna	2	State	Treasury
Dean	Benjamin	3	Rayburn	State
Dubin	Krista	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Figge	David	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Gill	Alexander	1	Treasury	Rayburn
Greco	John	2	State	Treasury
Greene	Joshua	3	Rayburn	State
Gupta	Sasha	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Hauswirth	Anna	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Herrick	Daniel	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Hoang	Phuong	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Kay	Benjamin	2	State	Treasury
Kay	Kenneth	1	Treasury	Rayburn
Kearney	Matthew	2	State	Treasury
Keller	Corey	3	Rayburn	State
Klein	Matthew	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Koellhoffer	Edward	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Kumar	Kevin	3	Rayburn	State
Kvarta	Mark	1	Treasury	Rayburn
Lin	Hsin-Pin	2	State	Treasury
Lindquist	Britta	3	Rayburn	State
Mai	Nguyen	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Manoranjan	Branavan	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Margul	Daniel	1	Treasury	Rayburn
Martin	Bradley	2	State	Treasury

Michelassi	Francesco	3	Rayburn	State
Mukherjee-Clavin	Bipasha	1	Treasury	Rayburn
Murciano-Goroff	Yonina	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Murray	Nicholas	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Nakamura	Ayumi	1	Treasury	Rayburn
Neth	Bryan	2	State	Treasury
Paolini	Brielle	2	State	Treasury
Schneider	Marguerite	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Short	Abigail	3	Rayburn	State
Simudra	Niyatee	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Smith	Lauren	4	Penn Avenue Terrace A	Penn Avenue Terrace B
Stockman	Sara	1	Treasury	Rayburn
Syc-Mazurek	Stephanie	5	Penn Avenue Terrace B	Penn Avenue Terrace A
Tetruashvily	Mazell	1	Treasury	Rayburn
Wied	Heather	2	State	Treasury
Wulsin	Aynara	3	Rayburn	State
Xu	Yifan	4	Penn Avenue Terrace A	Penn Avenue Terrace B

MENTOR BREAKOUT GROUP ASSIGNMENTS

- Group 1** **Bruce R. Ransom, MD, PhD**
- Group 2** **David J. Fink, MD**
- Group 3** **Stephen J. Korn, PhD and Suman Jayadev, MD**
- Group 4** **Christina M. Marra, MD and Tom Lloyd, MD, PhD**
- Group 5** **Lesli E. Skolarus and Richard O'Brien, MD, PhD**

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Faculty Biographies



David J. Fink, MD, University of Michigan

Dr. David Fink is the Robert Brear Professor and Chair of the Department of Neurology at the University of Michigan. A graduate of Harvard Medical School, Dr. Fink did residencies in medicine at the Massachusetts General Hospital and in neurology at UCSF, and a postdoctoral fellowship in neurochemistry at the NIH. His research, from laboratory work through preclinical animal studies to phase 1 and 2 clinical trials has focused on the development of gene transfer vectors for the peripheral nervous system. Dr. Fink is the author of

more than 160 publications in the peer review literature and is co-inventor on 4 issued patents. His work has been supported by grants from the Department of Veterans Affairs, the NIH and private foundations.



Suman Jayadev, MD, University of Washington

Dr. Jayadev studies a class of proteins, presenilins, involved in inflammatory cascades that can influence neurodegenerative processes, injuring brain and nerve cells. These proteins are also critical to prenatal development. Therefore her work may contribute to a better understanding of human development, as well as treatments to reduce CNS inflammation in persons with HIV/AIDS.

Stephen J. Korn, PhD, NINDS

Dr. Korn came to NINDS as Director of the Office of Training, Career Development and Workforce Diversity in January, 2006. He received his Ph.D. in Pharmacology from the University of North Carolina- Chapel Hill, and received postdoctoral training at NIH (as a PRAT Fellow of NIGMS) and at the Roche Institute of Molecular Biology (with financial support from NRSA postdoctoral fellowships). He then spent 15 years on the faculty of the University of Connecticut at Storrs, where he was a Full Professor. His area of scientific specialty is the molecular basis of ion channel gating and permeation, but he has also conducted electrophysiological and imaging research on calcium and pH transport/buffering, and synaptic transmission in the hippocampal slice.

Faculty Biographies



Tom Lloyd, M.D., Ph.D, Johns Hopkins University School of Medicine

Dr. Thomas Lloyd specializes in neuromuscular disorders in adults, with a particular interest in neurogenetics and motor neuron diseases including amyotrophic lateral sclerosis (ALS), motor neuropathies, and muscle diseases such as inclusion body myositis.

Dr. Lloyd's research interests include understanding the mechanisms of motor neuron degeneration using simple genetic model systems. Current investigations focus on the role of genes that regulate transport of organelles and survival signals along motor nerve axons. Dr. Lloyd is developing genetic and pharmacologic screens to identify novel drug targets for motor neuron diseases.

Dr. Thomas Lloyd received his M.D. and Ph.D. from Baylor College of Medicine in Houston, Texas. He then came to Johns Hopkins Hospital for residency training in Neurology, after which he completed a fellowship in Neuromuscular Medicine.



Christina M. Marra, MD, University of Washington

Christina M. Marra MD completed residency training in Neurology and fellowship training in Infectious Diseases. She is Professor of Neurology with an adjunct appointment in Medicine (Infectious Diseases) at the University of Washington in Seattle. She directs an NINDS-funded research program on neurosyphilis and participates in NIH-funded multi-center clinical research on the neurological consequences of HIV.



Richard J. O'Brien, MD, PhD, Johns Hopkins School of Medicine

Dr O'Brien is an authority on the production of cerebrospinal fluid and the amyloid A β peptide, both key steps in the development of memory and gait disorders; Dr. O'Brien's laboratory investigates the molecular mechanisms that regulate the development and maintenance of excitatory synapses in the central nervous system

Dr O'Brien sees patients with memory disorders and with CSF disorders including normal pressure hydrocephalus (NPH) at The Johns Hopkins Bayview Medical Center.

Faculty Biographies



Bruce R. Ransom, MD, PhD, University of Washington

Dr. Ransom's research focuses on the physiology and function of glial cells and mechanisms of neural injury associated with ischemia, especially in axonal pathways of the brain. A major goal of his work is to understand how glial cells interact with neurons in the course of normal and pathological brain function.

Ransom's current studies on glial cells are designed to determine their role in glutamate homeostasis in the brain and their role in brain energy metabolism. These studies are pursued using ion imaging techniques, biochemical analysis (including HPLC) and electrophysiology. He and his colleagues have begun to elucidate the important contributions of ion channels/transport mechanisms in regulating ionic balance and glutamate release. These mechanisms can exert critical influence over the excitability of neuronal populations and may also participate in pathological events like brain ischemia. Ransom's research also relates to neural injury. He is seeking to understand how myelinated axons within the central nervous system are affected by anoxic or ischemic insults during development and in adulthood. Increased knowledge of the basic pathophysiology of neural injury during maturation of the central nervous system will allow development of strategies that minimize the amount of injury in infants who undergo anoxic or ischemic insults.



Lesli E. Skolarus, MD, University of Michigan

I am a fellowship trained, board certified vascular neurologist, health disparities and health services researcher. I am passionate about reducing the burden of stroke in the US. Through my NINDS K23 career development award, and using a faith-based community based participatory research approach, I am working to improve stroke preparedness among African Americans in Flint, MI. I have a Master of Science degree in Health and Health Care Research from the University of Michigan and received my Medical degree from Wayne State University.

The Great Challenge

- Advancing medical science will require a 'physician scientist workforce', i.e. clinician-investigators
- *Do you want to accept the challenge?*

Figure 3.1. Number of Physicians Reporting Medical Research, Medical Education as Primary Practice Areas (2003-2012)

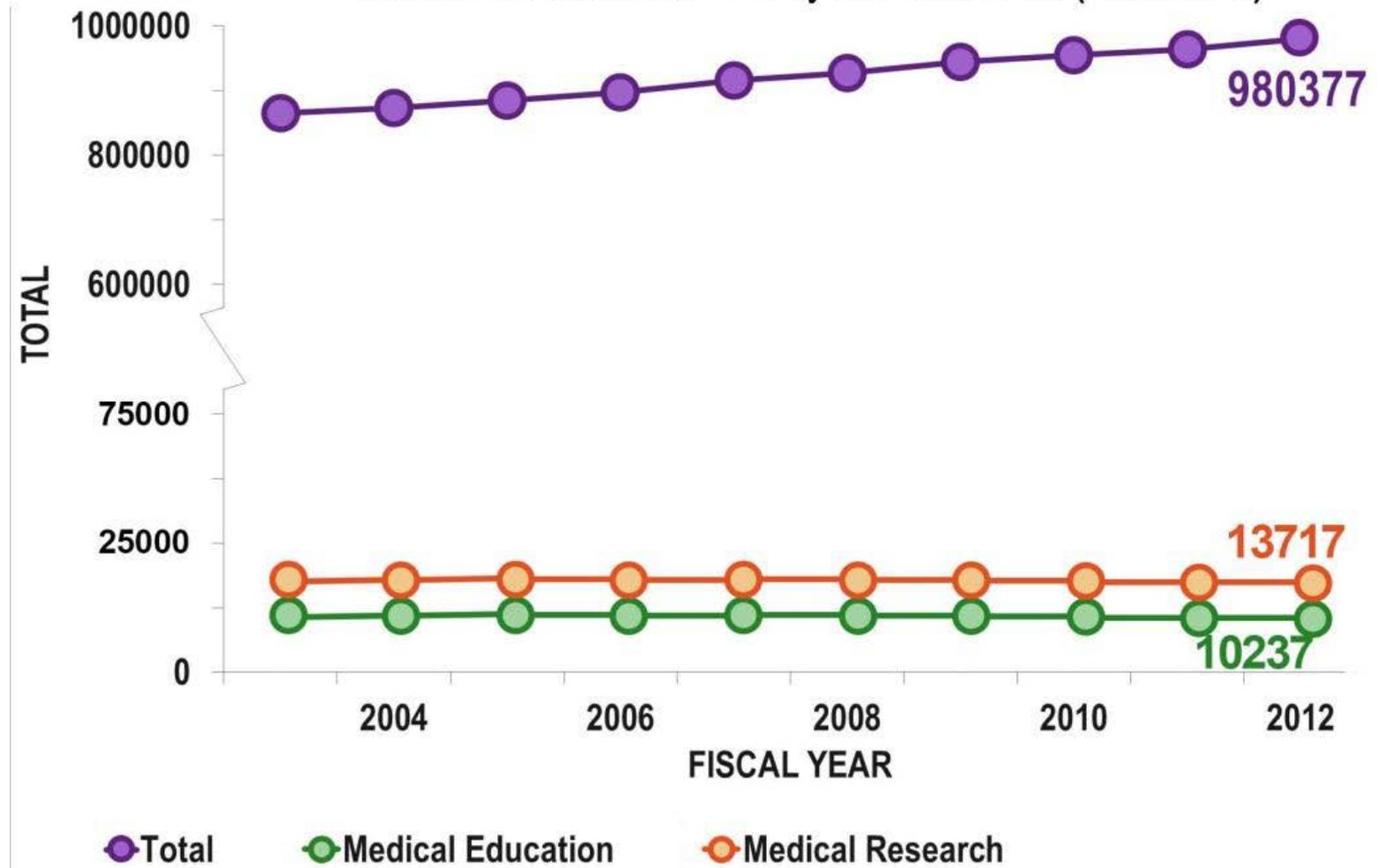
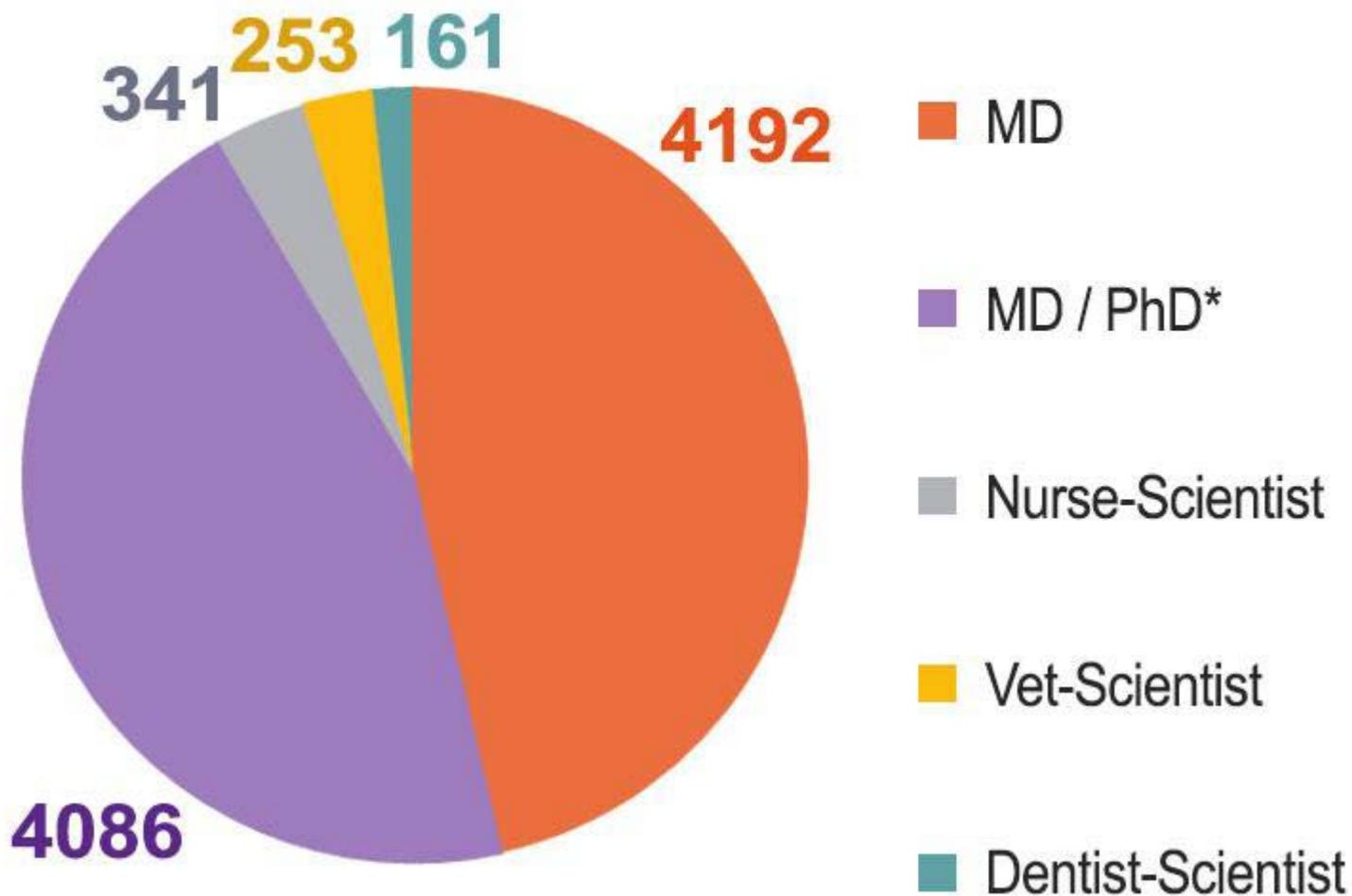
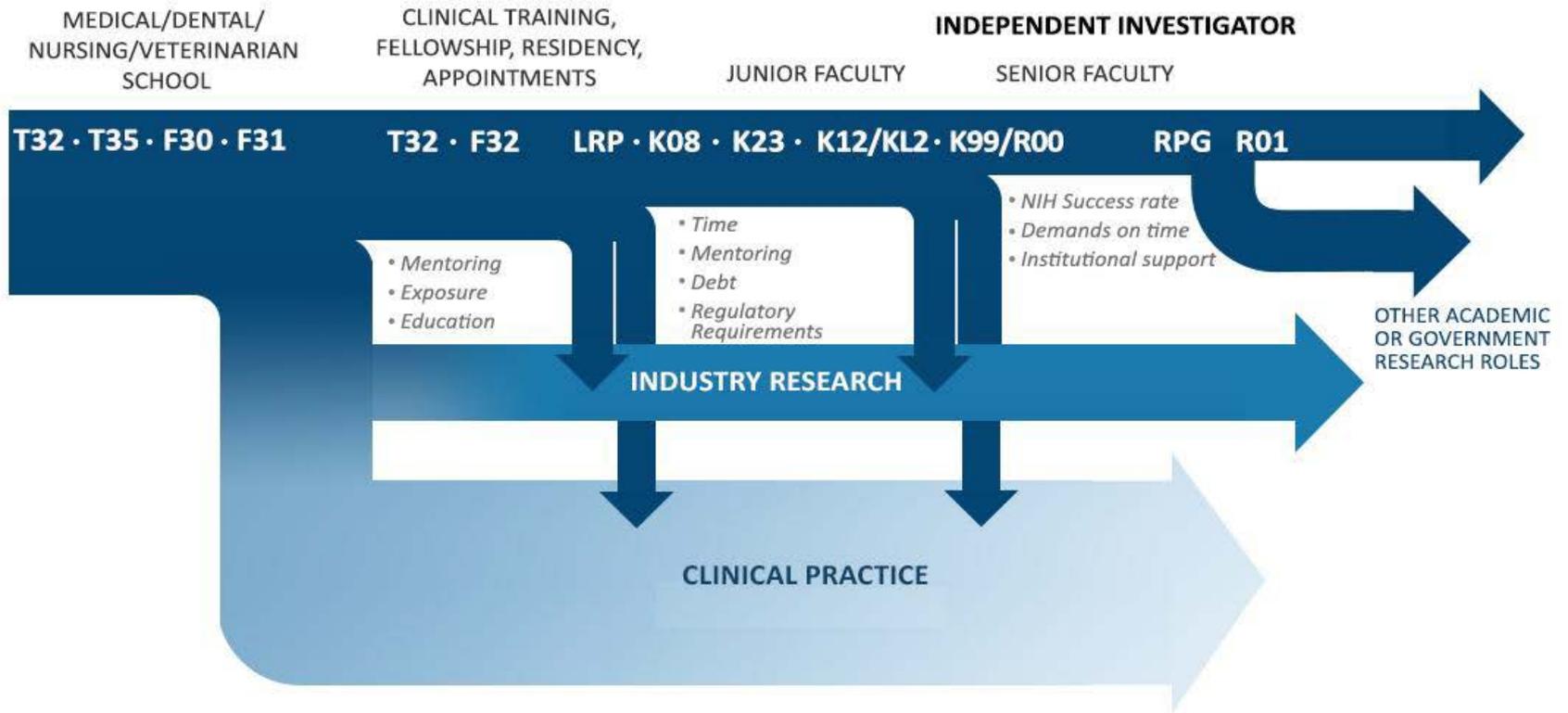


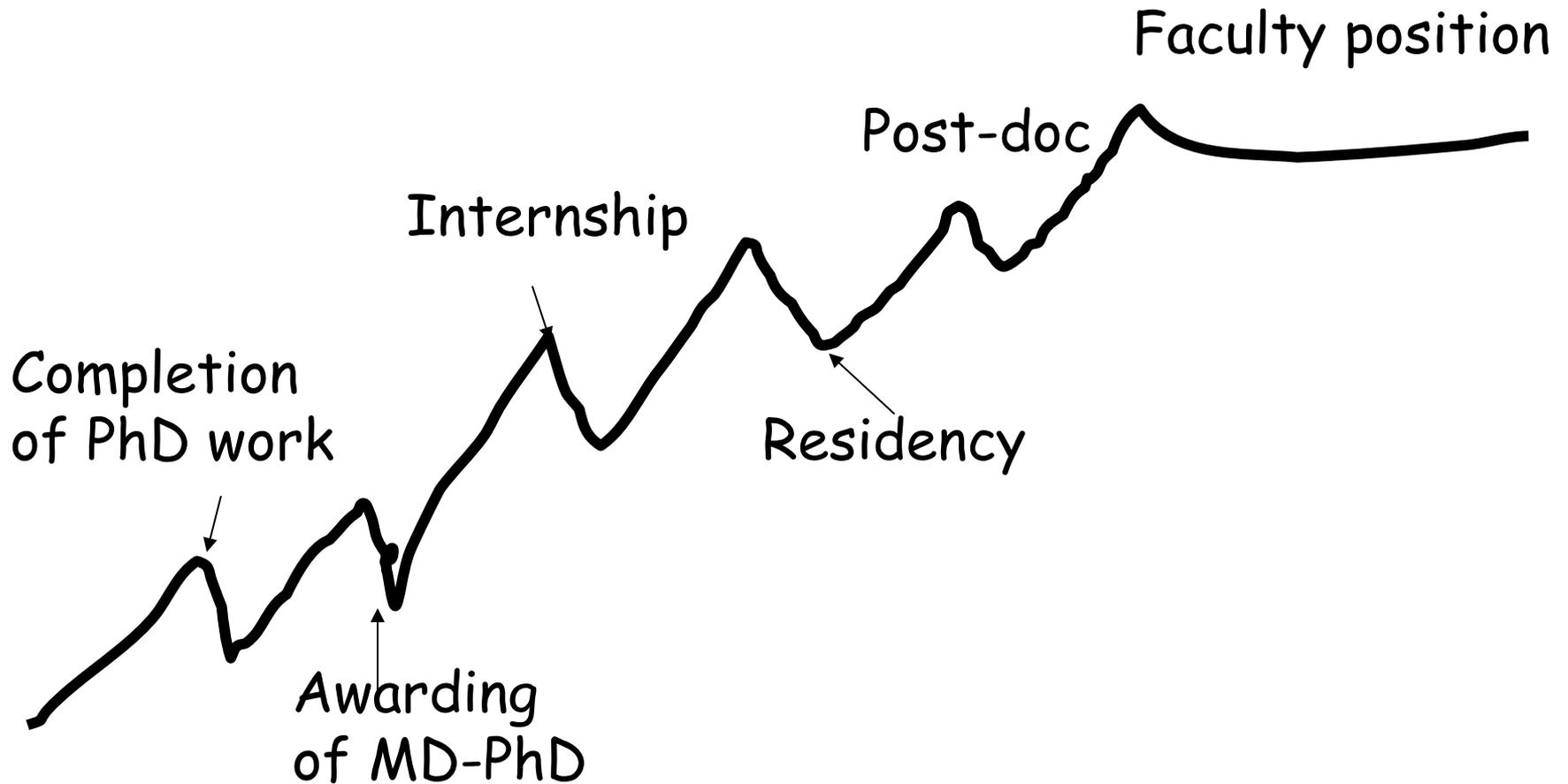
Figure 2.1. NIH-funded Physician-Scientist Workforce (FY2008-2012)



PSW TRAINING PIPELINE



The natural history of an MD-PhD: Why it's hard



A decision tree I

- Do I want to use my medicine?
(I don't have to)
- Do I want to use my science?
(I don't have to)
- What clinical training is attractive?
(Why do I think so?)
- Am I letting uncertainty or fear drive my decision making?
- How would I sculpt my life to be 10 and 15 years from now?

A decision tree II

- Neurology?
- Psychiatry?
- Neurosurgery?
- Anesthesia, ENT, Ophthalmology, Urology.....

Why not go into a field where I can command a really high salary AND do my research?

- The "market forces" that drive high salaries extract a price in terms of time in the O.R., etc.
 - For example, relatively few Neurosurgeons are able to maintain successful labs in which they are involved at a "hands on" level

So is it worth it?

- Academic medicine is *so much fun* we should have to pay to do it
- Fully trained MD-PhD's and research-trained medical students are the most sought after candidates for faculty positions
- They command greater resources
- They have a faster "rise time" as a new faculty member

Isn't it nuts to train for a career with 10% funding rates?

- The swings in funding do inestimable damage
BUT:
 - *Biomedical research makes a difference*
and provides an important economic
benefit
 - The federal investment can be buffered
by foundations, philanthropy, and industry
 - The lesson from previous cycles is that
those that keep going come out advantaged

What will Neurology (or other) residencies think of me?

- Are you interested in - excited about - excellent clinical training, given the time that it requires?
- Can you explain the meaning (impact, significance) of your research
- Are you willing to put aside research for 3 years?

- Is there still room for “triple threat” investigator/clinician/educator

YES- and it is *very* rewarding

- Can I have an academic neurology career and have a life

YES- but it's always been hard

Where should I train?

- There are LOTS of great programs-- no one program has everything
- The culture is crucial
 - is there a "fit"?
- You learn most from the residents
- Look at tomorrow's programs as well as the currently strong programs

The decision tree is individual

- Field
 - Medical vs surgical
 - "Market forces" extract a price
- Geography
- Size of the department
- Go-it-alone, or do you want to be part of a larger subspecialty group?
- Ability to make year-to-year changes

Some aphorisms

- At the end of your Residency you will be all dressed up and ready to go... anywhere you want
- In academic medicine time is the coin of the realm
- Truly protected time comes but once- *treasure it*
- You *can* do it all- but not at the same time
- Push hard for what you need-- you have options
- Ignore gratuitous advice

Gratuitous advice

- Be clear about your needs- it's OK to assert
- Your self-interest is their self-interest (whether they know it or not)
- A failure in career development is the most expensive failure a department can make- help them help you succeed
- Don't let the department's short-term needs blind them to the long-term goals
- Get it in writing

Expect:

- A plan for evolving independence in a mentored setting
- The ability to carry on *your* project
- A plan for time protection
- A plan for start-up resources
- Career development advice from multiple sources
- Rejections

Career Development for Clinician-Scientists: Where do you go from here and how do you get there?

AUPN – June 28, 2014

Stephen Korn, Ph.D.
Director, Office of Training and Career
Development and Workforce Diversity
NINDS, NIH

1. Why it's a good time for "young" clinician-scientist investigators

a. Policies

b. Data

2. The Review Process

3. Thoughts: What does it take and what are the realities out there.

What you may know already

- Great time to be in science
- If you're really passionate about science, it's a great life
- You can make a huge difference by combining **IMPORTANT** research with clinical work

In other words:

You can have a huge impact on future patients, and it's a lot of fun too.

What you may not realize

NIH in general, and NINDS specifically, are committed to helping you succeed in becoming a physician-scientist

- Grant mechanisms for all stages
- Creating research opportunities
- Workshops
- Career guidance
- Working with Chairs, Institutions and Societies

The Generic Funding Path

Resident, Fellow: F32, R25, private



Junior Faculty: Career Dev. (K08/K23/K99), private



Faculty: Independent Award (K02, R-series, others)

At appropriate time: Loan Repayment Program

If you want to do research

- Choose a residency that **WANTS** you to do research
- Find out whether the residency **WILL FUND** you to do research

NINDS: R25 for residents and fellows
in Neurology, Neurosurgery,
Neuropath., Neuroradiol.
and Emergency Medicine

NIMH: R25 for residents in Psychiatry

Other ICs: Admin. Supplements or
other mechanisms

NINDS R25: 25 residencies

Mission: Fast-track to K Award

(July 2009-2014)

Total residents supported:	134
Neurologists	72
Neurosurgeons:	46
Pediatric Neurol.:	11
Neuropathologists:	5
# moved from one R25 to another:	3

NIH policies and practices continue
to facilitate the success of early
stage investigators

Over 1000 MD/PHD students
funded each year from institutional
NIH grants (T32)

Fellowship Success Rates

	2013	
	NIH	NINDS
F30/F31 (MD/PHD)	40%	26%
F31 (predoc)	30%	22%
F32 (postdoc)	26%	27%

NIH-wide K Success rate (Application)

	Success Rate					
	2012	2011	2010	2009	2008	2003
K02	26%	38%	29%	36%	38%	48%
K08	42%	42%	44%	47%	44%	47%
K23	37%	34%	38%	44%	38%	42%
K24	46%	45%	61%	47%	51%	45%
K99	23%	22%	25%	29%	23%	N/A

Definitions

New Investigator (NI) is somebody who has not had an R01 or equivalent NIH grant

Early Stage Investigator (ESI) is somebody who is within 10 years of terminal degree or clinical training

ESI/NI Benefit at NINDS

	%tile funded or considered for funding	
	Established	NI/ESI
2007	9	>25
2008	10	>25
2009	11	20 / 30
2010	13	20 / 30
2011	14	20 / 30
2012	15	Up to 25
2013	14	Up to 25

Effect of ESI/NI Benefit on Time to R01

	Time to First R01	
	From Start of K Award	
	2003-2007	2008-2011
K08	6.3 ± 0.4 (46)	4.9 ± 0.2 (34)
K23	6.5 ± 0.5 (22)	4.5 ± 0.3 (22)

2011-2012 Applicant Success Rate (%) Single-PI R01s at NINDS

	MD	MD/PHD	PHD
Total	25	26	20
ESI	32	38	27
Non-ESI	23	22	18
NI	24	24	20
Non-NI	26	27	20

NINDS clinician K to R transition

For K awards terminating 2003-2011

- 41% of all K08s/K23s got R01s
- 55% of all K08s/K23s that tried got R01s
- 75% of all K08s/K23s have independent funding

NINDS clinician K careers

For K awards terminating 2003-2008

Currently in Academic Position

K08s: 86% K23s: 88%

Published between 2010-May 2012

K08s: 88% K23s: 85%

In Academic Position and Published...

K08s: 95% K23s: 96%

Conclusion

Clinician-Scientists are doing very well

Enough Data!

First Steps to Success



The tough part is putting yourself in a position to get a K in a timely manner

FOLLOW YOUR PASSION

NIH will fund “any” excellent basic or clinical biomedical science (somewhat depends on NIH institute)

1. NIH doesn't hate worms, flies, clinical research, basic research, physicians...
2. Research doesn't have to be translational

HAVE A LONG-RANGE PLAN

- Where are you going and how are you going to get there
- Keep your eyes on the target and your progress
- Be proactive
- Do important work

Take advantage of the fact that
you're a clinician

You need a good project that will get you to a K. Don't intentionally put time into things that have no future unless there's a very good reason

Reviews and case reports will not help your application in review

Get a “good” mentor, and be a “good” mentee!

Funding Mechanisms

National Institutes of Health

- 27 Institutes or Centers (ICs)
- Each IC has its own mission
- Each IC has its own budget
- Each IC has its own activities
- Each IC has its own ways of doing things
- Each IC has its own personality

When you're planning to submit a grant, check with program directors from different institutes to determine their specific policies and interest in your science.

Already talked about Fellow funding

R25 – if in residency with award

T32 – dep. on research area/institution

F32 – need to plan in advance

Private foundations

Funded investigator grant

Career Development Awards (Ks)

- 5 years
- Generally post-fellowship
- provide salary, fringe, research costs
- **protected time** (most require 75% effort devoted to research)

Details for all mechanisms vary by IC

K99/R00

Must have less than 4 yrs. postdoctoral research experience

- 2 years K99 (mentored)
 - 75% effort required
 - Salary and research costs (IC-specific)
- 3 years R00 (independent)
 - must have tenure track or equivalent position
 - must get appropriate startup package
 - 75% effort on research required
 - \$249,000 total cost

All career development awards other than the K99/R00 are open only to U.S. Citizens and permanent residents

Loan Repayment Program (LRP)

Clinical Research

Pediatric Research

Health Disparities Research

Contraception and Infertility

Clinical Research by Diverse Individ.

NINDS primarily supports clinicians

Alphabet soup of grant mechanisms once you reach independence

- R01, DP2, P01, R21, R03, STTR/SBIR
- Many more
- you need to identify what's appropriate for you from institute and NIH websites

And NIH is not the only game in town

Some things to keep in mind while
heading towards a K

- Choose lab/mentor/environment well
- Make sure you get outstanding mentoring, and that you are an outstanding mentee – do not underestimate its importance
- It's critical that you publish... and have some good first author publications
- Focus on high quality publications
- Devote enough time to crafting your grant – the bar is high, as it should be. GET GOOD HELP

The Review Process

Electronic submission is now unforgiving

1. You must be on time and get it right
2. Your institution submits it, but it's your application – be early and check on it

It is not uncommon for grants to be rejected by CSR because incomplete

i.e. It is your responsibility. Take control.¹⁰²

For NIH or anywhere else, your grant application will be reviewed by:

- Experts
- Non-experts
- People who are reading lots of grants
- People who want to be excited by science
- People who will be irritated by a sloppy application

Submit a high quality application!

Have people review your application critically
WELL BEFORE submission

All parts of any grant application need to be excellent

- Get help from the right people
- Spend enough time to make it great
(hint: it will take you months)

Hypothesis-Driven vs. Discovery Science

(Fishing vs Trawling)

(If you're going to fish, cast the line into
a big lake!)

Write clearly, coherently, logically

Do not be sloppy

DO NOT BE BORING

You may not be funded on the
first submission

**DO NOT TAKE REJECTION
PERSONALLY!**

And don't get frustrated.

PERSIST!

Fix the problems

- You can now resubmit repeatedly.
But...
- Understand what will be required for success. What is the summary statement saying?
- Get advice from your program director and others with funding success

Respond appropriately to reviewer comments



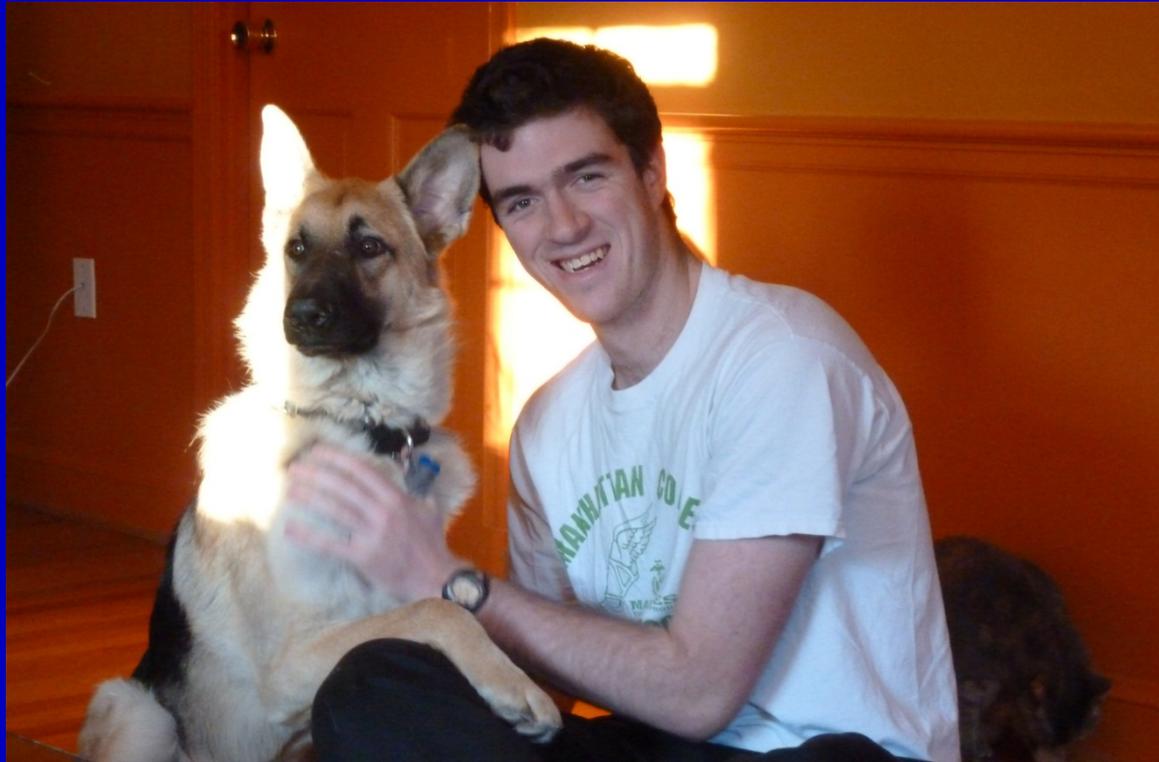
PERSIST! If you, your project and your mentor are “good,” you’ll succeed

But Persist Wisely – it isn’t a lottery and you’re entitled to nothing

Enjoy and appreciate it – Grant writing and review make your science better

Remember to

**HAVE FUN
&
HAVE A LIFE
(it's a choice!)**



If you have questions:

Email or Call

(Email is better for first contact)

Program Director - questions related to science

Training Director (e.g. me) - for questions related to mechanisms, application preparation, direction, problems, etc.

korns@ninds.nih.gov

Physician-Scientist: Career and Family: Can You Have it All?

Christina M. Marra, MD

Neurology and Medicine (Infectious Diseases)

University of Washington School of Medicine

No, but you can have a lot...

Outline

- See one, do one, teach one
- Work-life balance
- Life choices
- Family
- Practical advice
- Flexibility
- Citizenship
- Saying YES

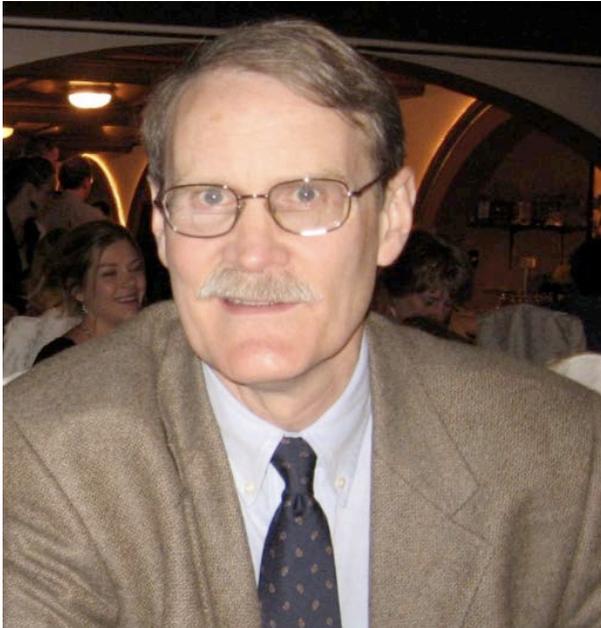
See One Do One Teach One...The Route



The Route

- BA in chemistry and biochemistry UCSD
- MS in biochemistry and biophysics OSU
- Worked as a lab tech, San Diego, Portland
- Medical school OHSU
- Married
- Medicine Internship UW
- Neurology Residency UW

Then I Took Some Good Advice



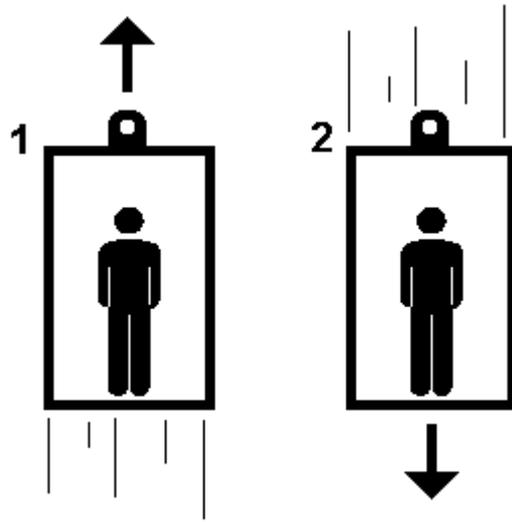
- Infectious Diseases Fellowship 1988-1992
 - Neurocognitive abnormalities in asymptomatic HIV-infected men
 - Collier AC, Marra C et al. J Acquir Immune Defic Syndr 1992;5:229-241.
 - Cohen WA, Maravilla KR, Gerlach R, Claypoole K, Collier AC, Marra C et al. Am J Neuroradiol 1992;13:1231-40.
 - Claypoole K, Townes BD, Collier AC, Marra C et al. Int J Neurosci 1993;70:13-27.
 - Marra CM et al. J Neuro-AIDS 1996;1:41-65.

Another Benefit

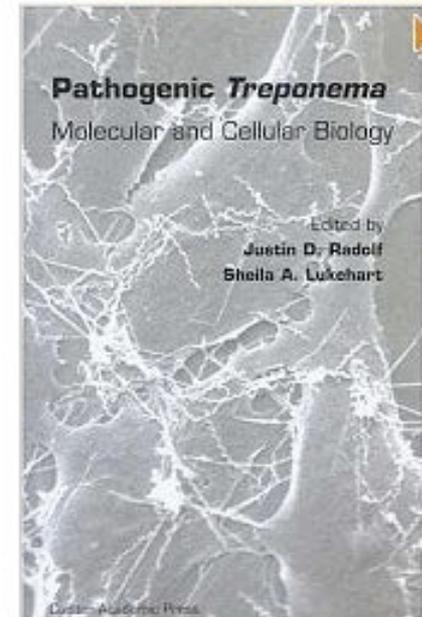
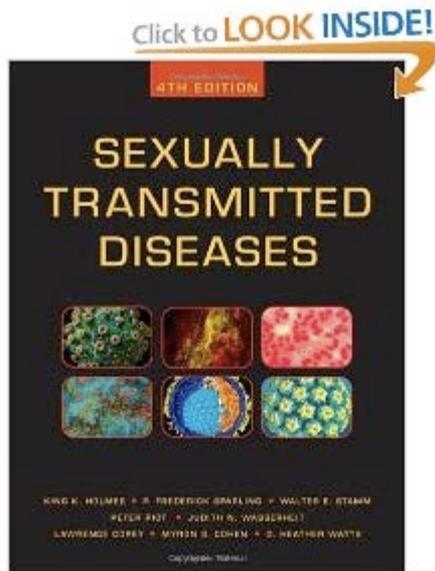


- AIDS Clinical Trials Group 1992-
 - Design clinical trials
 - Neurology Subcommittee Chair
 - PI ACTG 363, ACTG 736; analyzed ACTG 145
 - Marra CM et al. Clin Infect Dis 2000;30:540-544.
 - Marra CM et al AIDS 2002;16:1791-7.
 - Marra CM et al. AIDS 2009;23:1359-66.
 - 20 other publications with the group
- CHARTER 2003-
 - Central Nervous System HIV Anti-Retroviral Therapy Effects Research
 - Marra CM et al. Int J STD & AIDS 2013;24:351-5
 - 27 other publications with the group

More Good Advice...



Click to **LOOK INSIDE!**



Qualities of a Great Mentor

- Smart
- Accomplished
- Funded
- Committed
 - Explain the system
 - Write an abstract
 - Give a talk
 - Review a manuscript
 - Write a manuscript
 - Write a grant
- Generous

Funding

- 1991-1993, “SIV-Induced Changes in the Host Response and Course of Syphilis,” NIA, UW CFAR
- 1992-1996, “Pathogenesis and Treatment of Experimental Neurosyphilis,” NINDS K08

MADISON CLINIC

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FOR PATIENTS

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NEW - [MADISON INFLUENZA PLAN - 2013](#)



The Harborview Madison Clinic provides medical care and social services for persons living with HIV/AIDS regardless of sexual orientation, race, or ability to pay. [Harborview Medical Center](#) is affiliated with the [University of Washington](#) and is recognized nationally for its patient care, teaching, and research in HIV-related diseases. Each patient is a partner in the management of HIV/AIDS. They are encouraged to ask questions, understand the reasons for tests and procedures, and let us know how we can help.

Each patient has a primary care provider who organizes the services required. Other members of the care team include nurses, pharmacists, nutritionists, social workers and specialists (acupuncture, dermatology, **neurology**, obstetrics, oncology, and psychiatry). Extensive case management is the hallmark of HIV/AIDS care at Harborview, and everything is done to coordinate care and reassure patients that this complex illness is being addressed comprehensively. Patients will be seen regardless of their ability to pay. Our financial counselors can help determine whether patients qualify for medical benefit programs.

Funding

- 1996-1997, “Role of Antiretrovirals in the Pathogenesis of Hearing Loss in Human Immunodeficiency Virus Infection, UW Royalty Research Fund
- 1996-2014, “Persistence of CNS *T. pallidum* in HIV Infection,” NINDS R01

Funding

- 2000-2005, “Role of *T. pallidum* msp-homologues in CNS invasion,” NINDS R01
- 2001-2004, “Novel Methods to Assess Brain Function in HIV-1,” NIMH R21
- 2005-2007, “Rapid and Simple CSF Tests for Neurosyphilis Diagnosis,” NINDS R03

Funding



- **2013, “University of Washington Provost’s Research Fund,” bridging funds UW**
- 2013-2018, “Lumbar Puncture and Syphilis Outcome,” NINDS R01
- 2014-2019, “Persistence of CNS *T. pallidum* in HIV Infection,” NINDS R01

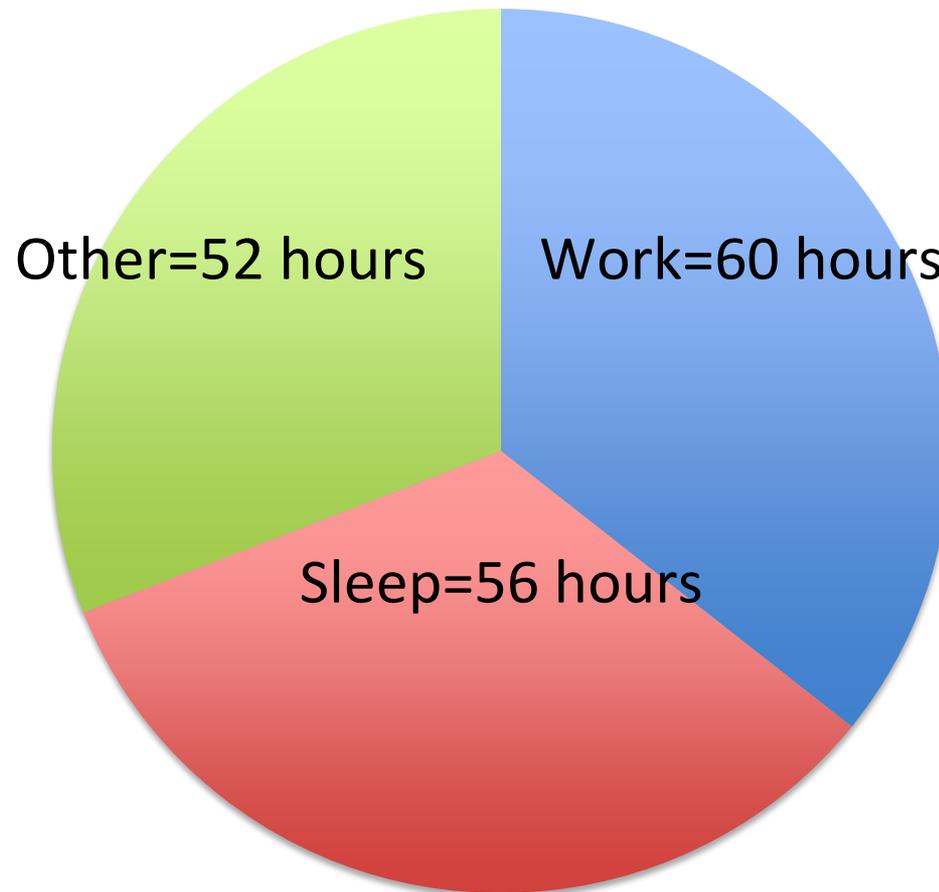
Work-Life Balance



Work-Life Balance



Work-Life Balance





Work-Life Balance

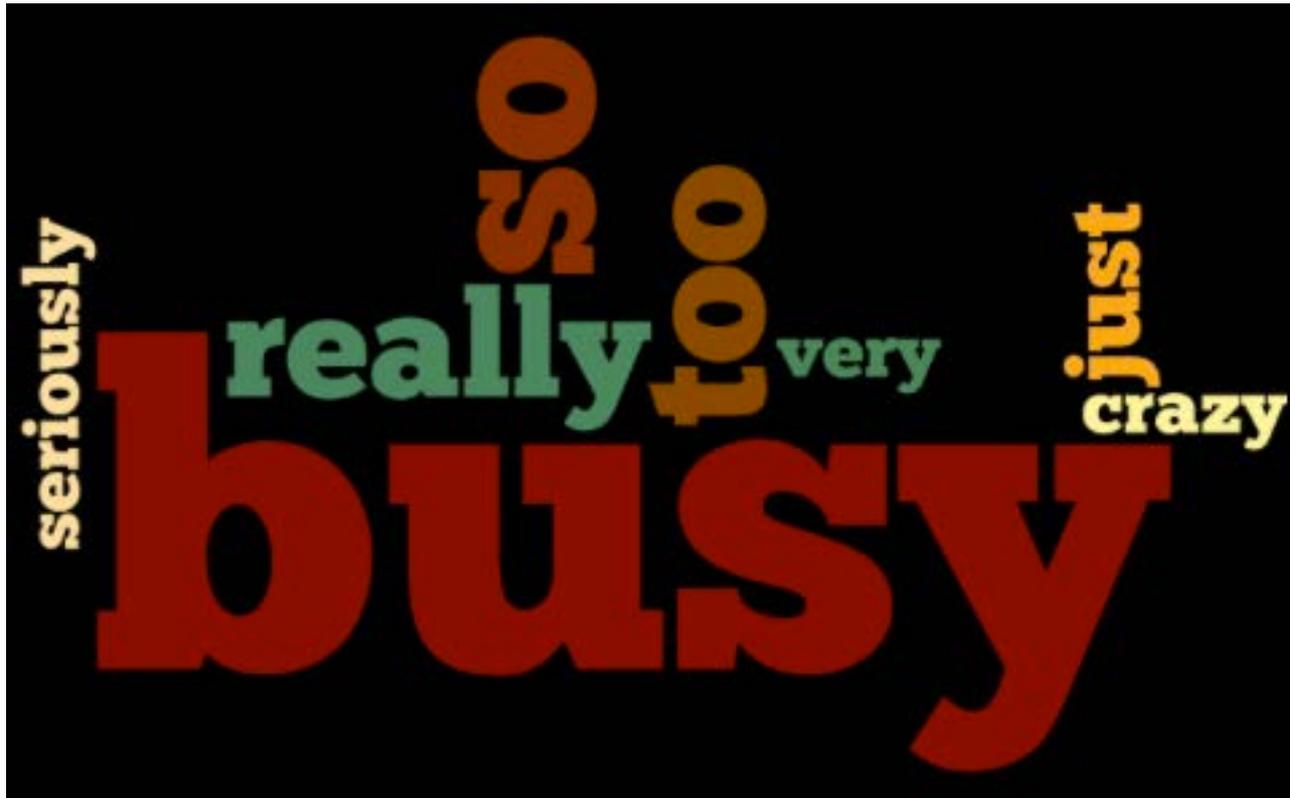
No one on his deathbed ever said “I wish I’d spent more time at the office.” Don’t get me wrong. Work is a wonderful thing. It can be very fulfilling and can provide meaningful service to others. But personal relationships are the most important things in our lives. It’s through relationships with others that we learn about ourselves, about how to make choices, how to self correct, how to grow and develop, how to contribute to the human community, how to turn dreams into reality. –Rodger Duncan

Life Choices: Figure Out Your Priorities

- Jappreet Sethi, LinkedIn
 - What is your focus for the next 5 years?
 - If you could have an extra hour in a day, how would you spend it?
 - Would you be comfortable not spending a lot of time with your kids as they grow up?
 - Are your family members on board with your work-family choices?
 - What gives you the greatest satisfaction, and can you get it at least twice a week?
 - What do you want to be remembered for when you die?

Practical Advice

- Really good childcare/adultcare
 - Plan ahead for snow days, sick days, teacher conference days
- If all else is equal, consider living near extended family
- Consider your commute
- Early risers...
- Schedule recurring social activities
- Take time for yourself
- When you're away from work, be away
- Appreciate your partner/s
- Outsource the unimportant stuff



Replace “I’m too busy” with
“that’s not important to me right now”

Flexibility



- Things are going to change whether you want them to or not
- Avoid
 - Catastrophizing
 - Guilt

Citizenship: DYKWIA???



- We are all special
- Humility
 - Respect other people's time
 - Participate in departmental life
- Generosity
 - Students

Say YES

- Is this interesting to me?
- Can I use it again?
- Will it be published/indexed?
 - Avoid predatory publishers:
<http://scholarlyoa.com/publishers/>
- Ask others if unsure
- Say no selectively

RECENT POSTS

- Questionable Publishers Block Access to Their Websites in Colorado
- Science Publishing Group Publishes Junk Science
- Serbian Journal Accepts Paper in 24 Hours with No Peer Review, Demands EUR 1785
- De Gruyter Journal Hijacked
- A New Clone of OMICS Publishing Group: MedCrave

Overview of NINDS Funding Mechanisms

Research Project, Center Grants, and Cooperative Agreement Awards:

Mechanism – Program	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
<u>R01: Research Project Grant</u>	This program supports a focused research project conducted by a principal investigator. Also supported are <i>Pilot Clinical Trial Grants for Neurological Disease</i> to gather preliminary data and conduct clinical studies to support the rationale for a subsequent full-scale clinical trial of intervention to treat or prevent neurological disease.	Prorated based on PI % effort.	Modular up to \$250K. NINDS approval for over \$500K.	Up to 5 years. May be renewed.
<u>R03: Small Grant Program</u>	This program supports new research projects that: 1) lead to a defined product, resource or “deliverable” that has inherent value to the neuroscience community; 2) will generate an important and potentially publishable unit of information or dataset; or 3) focus on secondary analysis of clinical data sets.	Prorated based on PI % effort.	Modular up to \$50K.	Up to 2 years. Not renewable.
<u>R15: Academic Research Enhancement Award</u>	This award provides support for research projects by faculty who are located in health professional schools or other academic components that have not been major recipients of NIH research grant funds.	Prorated based on PI % effort.	Detailed budget up to \$300K. (Modular up to \$250K.)	Up to 3 years. May be renewed.
<u>R21: Exploratory/ Developmental Grant</u>	This program supports new research projects that: 1) assess the feasibility of a novel avenue of investigation; 2) involve high risk experiments that could lead to a breakthrough in a particular field; or 3) demonstrate the feasibility of new technologies that could have major impact in a specific area.	Prorated based on PI % effort.	Modular up to \$275K.	Up to 2 years. Not renewable.
<u>P01: Research Program Project Grant</u>	This program supports broadly based multidisciplinary research programs with a well-defined central research focus or theme. Program projects must have a minimum of 3 interrelated projects that contribute to the program objective, as well as shared resources (Cores).	Prorated based on PI % effort.	Program staff approval for over \$500K.	Up to 5 years. May be renewed once.
<u>P30: Center Core Grant</u> -	This program supports shared resources and facilities used by investigators with NINDS funded grants. An institution is eligible for a maximum of one NINDS Core Grant. These awards will support basic, translational, and clinical research, but will not be used to support clinical trials or to provide patient services.	Prorated based on PI % effort.	Up to \$400K.	Up to 5 years. May be renewed.

<u>P50: Specialized Center Grant</u>	This Center Grant supports any part of the full range of research and development activities comprising a multidisciplinary attack on a specific disease entity or biomedical problem area within the mission of NINDS. Consultation with NINDS Program staff is crucial to the development of a P50 application.	Prorated based on PI % effort.	Program staff approval for over \$500K.	Up to 5 years. May be renewed once.
<u>U01: Research Project - Cooperative Agreement</u>	Supports cooperative agreements that will have milestone-driven projects focused on the identification and pre-clinical testing of new therapeutics. This cooperative agreement supports a focused research program conducted by a principal investigator with substantial involvement by NINDS staff in research activities.	Prorated based on PI % effort.	Depends on specific announcement.	Up to 5 years. May be renewed.
<u>U10: Cooperative Clinical Research Grant</u>	This cooperative research grant supports the clinical evaluation of various methods of therapy and/or prevention in specific disease areas. There is substantial involvement by NINDS staff in research activities.	Prorated based on PI % effort.	Depends on specific announcement.	Up to 5 years. May be renewed.
<u>U24: Resource-Related Research Project - Cooperative Agreement</u>	This cooperative agreement aims to improve the capability of resources to serve biomedical research. The project includes substantial involvement of NINDS staff, and may serve a local, regional, or national user group. The project will normally include shared resources, technical expertise, and scientific expertise. Supports cooperative agreements that will have milestone-driven projects focused on the identification and pre-clinical testing of new therapeutics.	Prorated based on PI % effort.	Depends on Specific RFA.	Up to 3 years. May be renewed.
<u>U54: NINDS Cooperative Program in Translational Research</u>	This cooperative agreement supports a specialized center that will have milestone-driven projects focused on the identification and pre-clinical testing of new therapeutics. The program will facilitate review and administration of projects and will accelerate the translation of discoveries in basic research to treatment in the clinic. The center may serve as a regional or national resource for special research purposes.	Prorated based on PI % effort.	Program staff approval for over \$500K.	Up to 5 years. May be renewed.
<u>U54: Specialized Center - Cooperative Agreement</u>	This program is designed to augment and strengthen the research capabilities of faculty, students, and fellows at minority institutions by supporting the development of new, and/or the enhancement of ongoing, basic and clinical projects and programs. All projects are milestone driven.	Prorated based on PI % effort.	Up to \$1M per year. (basic) Up to \$1.5M per year. (clinical)	Up to 5 years. Renewal under administrative consideration.

Research Education Programs

Mechanism – Program	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
<u>R25: NINDS Diversity Research Education Grants in Neuroscience</u>	The National Institute on Neurological Disorders and Stroke (NINDS) Research Education grant is a flexible and specialized mechanism designed to foster the development of neuroscience researchers through creative and innovative educational programs. R25 Education Projects enable grantee organizations to provide research, mentorship and related experiences for undergraduate, graduate and medical students, postdoctoral fellows and other junior scientists to broaden their skills and enhance their career development opportunities. Funding support for the R25 Diversity Education Programs should lead to increased recruitment, mentoring, training and retention of diverse researchers in the scientific and technology workforce. This mechanism of support is not to be used to substitute	Prorated based on the PI % effort. All personnel costs associated with directing, coordinating, administering and implementing the program may not	Up to \$250K Direct Costs per year.	Up to 5 years.

	the Ruth L. Kirschstein National Research Service Award training and fellowship mechanisms supported by the NIH.	exceed 25% of the total direct costs in any year of the project.		
R25: Research Education Programs for Residents and Fellows in Neurology, Neurosurgery, Neuropathology and Neuroradiology	These research education grants will create an opportunity for medical residents and fellows to participate in an intensive 9 to 24 months of mentored research education experience during residency and fellowship years. This opportunity will include the necessary training for successful competition for independent mentored research awards and will facilitate the transition from fellow/resident to clinician-scientist. In addition to laboratory research skills, participants in the program will develop the critical skills necessary to design and conduct research experiments and write competitive grant applications.	Participants may be paid salary plus fringe for 80% full-time professional effort (4 days per week during the M-F workweek) for between 6 and 12 months per year plus up to \$3000 for travel to a scientific meeting and an NINDS-sponsored workshop.	Up to \$10,000 per year is provided to the institution for administrative costs.	9-24 months. Not renewable.
R25: Summer Research Experience Programs	These research education grants provide a high quality research experience for high school and college students during their summer academic break. The NIH expects that such programs will: help attract young students to careers in science; provide opportunities for college students to gain valuable research experience to help prepare them for graduate school. The programs would also contribute to enhancing overall science literacy. (This program at NINDS does not support science teachers.)	Participant costs are based on a maximum 15 weeks. Salary and fringe benefits up to \$5,000 per high school student and up to \$6,000 per college student. For programs shorter than 15 weeks, these amounts will be prorated accordingly.	Up to \$100K Direct Costs per year.	Up to 5 years.

Conference Grants:

Mechanism – Program	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
<u>R13: Conference Grant</u>	This granting program provides support for scientific meetings, conferences, and workshops that are relevant the scientific mission of the NINDS. Support of these meetings is contingent on the interests and priorities of the NINDS.	May request partial salary for PI and other staff.	No limit, but typically in the range of \$10K-	Up to 5 years, but generally 1 year. May be

	Consultation with Program staff and subsequent letter of intent is essential to the development of an R13 application.		\$25K.	renewed.
<u>U13: Cooperative Conference Grant</u>	This granting program provides support for scientific meetings, conferences, and workshops that are relevant the scientific mission of the NINDS. The U13 requires close collaboration with and input from NINDS Program staff in the conceptualization and administration of the program, e.g., agenda, speakers, and post-meeting publications.	May request partial salary for PI and other staff.	No limit, but generally less than \$100K.	Up to 5 years, but generally 1 year. May be renewed.

Small Business Grants:

Mechanism – Program	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
<u>R41: Small Business Technology Transfer (STTR), Phase I</u>	To support cooperative R&D projects between small business concerns and research institutions, limited in time and amount, to establish the technical merit and feasibility of ideas that have potential for commercialization. Awards are made to small business concerns only.	Prorated based on PI % effort.	Up to \$100K for phase I.	1 year, followed by STTR phase II.
<u>R42: Small Business Technology Transfer (STTR), Phase II</u>	To support in-depth development of cooperative R&D projects between small business concerns and research institutions, limited in time and amount, whose feasibility has been established in Phase I and that have potential for commercialization. Awards are made to small business concerns only.	Prorated based on PI % effort.	Up to \$750K.	2 years.
<u>R43: Small Business Innovative Research (SBIR), Phase I</u>	To support projects, limited in time and amount, to establish the technical merit and feasibility of R&D ideas that may ultimately lead to a commercial product(s) or service(s).	Prorated based on PI % effort.	Up to \$100K for phase I.	6 months, followed by SBIR phase II.
<u>R44: Small Business Innovative Research (SBIR), Phase II</u>	To support in-depth development of R&D ideas whose feasibility has been established in Phase I and which are likely to result in commercial products or services. SBIR Phase II are considered Fast-Track and do not require National Council Review.	Prorated based on PI % effort.	Up to \$750K.	2 years.
<u>U44: Cooperative Small Business Awards in Translational Research</u>	This Cooperative Agreement aims to provide support for Phase II, and Fast-Track projects that directly address identification and pre-clinical testing of new therapeutics. Cooperative agreements include substantial involvement of NINDS staff.	Prorated based on PI % effort.	Up to \$300K for Ph I of Fast-Track Up to \$750K Up to \$1M if include IND or IDE filing	Up to 2 years for Ph I of Fast-Track Up to 3 years

Institutional NRSA Training Grants:

Mechanism – Program ↓	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
<u>T32: Institutional Training Awards</u>	This training grant supports advanced (dissertation stage) predoctoral Ph.D. and M.D. students, postdoctoral fellows, or a mix of both. All applications to this program must have a central focus or theme. Funds should be used to support novel and/or expanded training opportunities.	Predocs: \$22,476 per year. Postdocs: \$42,000-\$55,272 per year.	Predocs: \$4,200 per year. Postdocs: \$7,850 per year.	5-year award. Renewable.
<u>T32: Jointly Sponsored Predoctoral Training in</u>	This training grant is jointly sponsored by NINDS and 9 other NIH Institutes. It provides broad training in the Neurosciences focused on the early years of	Predocs: \$22,476 per year.	Predocs: \$4,200 per year.	5-year award. Renewable.

Neuroscience	training before full-time thesis research is started and allows institutions to consolidate their predoctoral training.			
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Individual NRSA Fellowships:

Mechanism – Program ↓	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
F30: Individual Predoctoral Fellowships for Students in MD/PhD Programs	The Kirschstein-NRSA F30 award supports research and clinical training that leads to the MD/PhD degree or another dual-doctoral degree. Because the F30 program is intended to support individuals in an integrated, dual-degree program during both their graduate research training and clinical training, the F30 cannot be used to support only the clinical training years. Eligible applicants must be within the first 48 months of their dual-degree program at the time of application, and will not be supported after year 8 of dual-degree training.	\$22,476 per year.	Up to \$4,200 per year.	Up to 6 years. Non-renewable.
F31: Individual Predoctoral Fellowships for Students in MD/PhD Programs	This fellowship is designed to support up to 5 years of predoctoral research training for students in combined MD/PhD programs. This mechanism does not support medical school education. Individuals must be enrolled in an M.D. program at an accredited medical school, accepted in a related scientific Ph.D. program, and supervised by a mentor in that scientific discipline at the time of submission. Applicants must have a minimum of 1 year of dissertation research remaining at the time an award is made. The final receipt date for new applications was April 8, 2014. Resubmissions will be accepted through the December 8, 2014 receipt date after which this mechanism will be discontinued.	\$22,476 per year.	Up to \$4,200 per year.	Up to 5 years. Non-renewable.
F31: Individual Predoctoral Fellowships	This program is an individual NRSA for doctoral candidates that have successfully completed their comprehensive examinations and will be performing dissertation research and training. The NINDS will provide up to 3 years of support for candidates within their first 6 years of graduate school.	\$22,476 per year.	Up to \$4,200 per year.	Up to 3 years. Non-renewable.
F31: Predoctoral Fellowships to Promote Diversity	NINDS will provide up to 5 years of support for research training leading to the Ph.D. or equivalent research degree; the combined M.D./Ph.D. degree; or other combined professional doctorate/research Ph.D. degrees in the biomedical or behavioral sciences. These fellowships (F31) are for well-qualified students from diversity groups found to be underrepresented in the biomedical and behavioral sciences in the United States (as defined in the program announcement). The overall goal of this program is to increase the number of scientists from diverse population groups who are prepared to pursue careers in biomedical, behavioral, social, clinical, or health services research.	\$22,476 per year.	Up to \$4,200 per year.	Up to 5 years. Non-renewable.
F32: Individual Postdoctoral Fellowships	This individual NRSA targets individuals seeking postdoctoral research training in the basic and clinical neurological sciences.	\$42,000-\$55,272 per year.	Up to \$7,850 per year.	Up to 3 years. Non-renewable.
F05: International Neuroscience Fellowship Program	This program provides a unique opportunity to qualified foreign neuroscientists, at the junior or mid-career level, to receive up to three years of research training in the United States (U.S.). Eligible individual applicants include non-immigrant foreign scientists with a doctoral degree (or its equivalent) and a sponsor in the U.S. who is affiliated with an eligible U.S. organization. This individual must also have an endorsement from their home institution, and an appointment in an institution in their home country upon completion of the fellowship. The	\$42,000-\$55,272 per year.	Up to \$7,850 per year.	Up to 3 years. Non-renewable.

	proposed research training must be within the scope of biomedical, behavioral, or clinical research as it relates to neuroscience, and should enhance the trainee's knowledge and skills to conduct independent research in his or her home country.			
<u>F33: Individual Senior Fellowships</u>	This senior NRSA fellowship is for individuals beyond the new-investigator stage who wish to: 1) make major changes in their research direction; 2) broaden their scientific background; or 3) acquire new research skills.	Commensurate with base salary that would be paid by the institution with which the awardee is permanently affiliated.	Up to \$7,850 per year.	Up to 3 years. Non-renewable.

Career Development Awards:

Mechanism – Program ↓	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
<u>K01: NINDS Faculty Development Award to Promote Diversity in Neuroscience Research</u>	The NINDS Faculty Development Award to Promote Diversity in Neuroscience Research (K01) provides junior faculty support and protected time (up to three years) for an intensive, supervised career development experience in neuroscience research. The goal of the NINDS K01 is to diversify the pool of independent neuroscience research investigators and to enhance the probability of success in obtaining independent NIH or other independent research support. Mentoring is expected to be appropriate for this stage of career and should focus on enhancing tenure track (or equivalent) activities or metrics (i.e., helping the junior faculty member to navigate institutional expectations, scientific networks, and practices that are relevant to productivity and advancement at the institution). Individuals from backgrounds underrepresented in biomedical research are eligible for support under this award if they have doctoral research degrees (Ph.D. or equivalent) and are in the first 3 years of a faculty position at the time of award.	Up to \$85,000 per year.	Research and career development costs up to \$100,000 per year.	Up to 3 years. Not renewable.
<u>K02: Independent Scientist Award</u>	This program provides a period of intensive research focus for newly independent clinical-scientists. The award provides salary and research costs for the first three years, and continued salary support for years four and five, contingent on successful competition for an R01 or equivalent award. In contrast to requirements of other institutes, applicants are not eligible for this award if they have a major, independent, peer-reviewed research grant (R01, subproject on a P01, or equivalent) prior to receiving the K02 award. Awardees are encouraged to apply for R01 support at any time after they've received the K02 award.	Years 1-3: Up to \$105,000 per year. Years 4-5: Up to 80% of institutional base	Years 1-3: Up to \$50,000 per year. Years 4-5: N/A	Up to 5 years. (Years 4/5 require R01). Not renewable.

<u>K08: Mentored Clinical Scientist Research Career Development Award</u>	This award provides "protected time" for clinically trained persons to participate in an intensive, supervised training program in biomedical research. Candidates must apply within 3 years of completing clinical training.	Up to \$95,000 per year.	Up to \$50,000 per year.	3-5 years. Not renewable.
<u>K12: Neurological Sciences Academic Development Award (NSADA)</u>	Institutional award to train pediatric neurologists for careers in research. Newly trained pediatric neurologists are selected and appointed to this program by the sponsoring institution. It is expected that individuals appointed to the NSADA program will subsequently apply for their own Mentored Clinical Scientist Development Award (K08), the Mentored Patient-Oriented Career Development Award (K23), an NINDS Research Scientist Development Award (K02) or an R01, to continue their research training.	Up to \$85,000 per year.	Up to \$30,000 per year.	Up to 5 years. May be renewed.
<u>K23: Mentored Patient-Oriented Research Career Development Award</u>	Supports the career development of clinically trained investigators with an M.D. or equivalent degree who have made a commitment to patient-oriented research. For the purposes of this award, patient-oriented research is defined as research conducted with human subjects (or on material of human origin such as tissues, specimens, and cognitive phenomena) for which an investigator directly interacts with human subjects. This area of research includes: 1) mechanisms of human disease; 2) therapeutic interventions; 3) clinical trials; and 4) the development of new technologies.	Up to \$95,000 per year.	Up to \$50,000 per year.	3-5 years research. Not renewable.
<u>K24: Midcareer Patient-Oriented Research Career Development Award</u>	Supports clinicians (M.D. degree or equivalent) devoted to patient-oriented research and to mentoring of beginning clinical investigators in this area of research. Candidates must have independent research support at the time of application and maintain independent research support for the duration of the career award. NINDS has detailed programmatic priorities with regard to the mentoring component of the K24 award. Potential applicants are urged to contact the NINDS Director of Training and Career Development before preparing an application.	Salary of 25 to 50% full-time professional effort consistent with the established salary structure at the institution	Up to \$50,000 per year for mentoring activities.	Up to 5 years. May be renewed.

<p><u>K22: NINDS Advanced Postdoctoral Career Transition Award to Promote Diversity in Neuroscience Research</u></p>	<p>The NINDS Advanced Postdoctoral Career Transition Award to Promote Diversity (K22) is designed to increase the number of highly trained early career investigators from diverse backgrounds underrepresented in neuroscience research. This opportunity provides individuals from diverse backgrounds underrepresented in neuroscience with the resources and tools that will help facilitate a transition to a stable and productive independent research position. Individuals are eligible for support under this award if they have doctoral research degrees (Ph.D., Ph.D./M.D. or equivalent) and between 2 and 5 years of postdoctoral research experience at the time of application. This award is divided up into two phases: an advanced postdoctoral training period (Phase I) and a subsequent independent position (Phase II). Transition from Phase I to II is contingent on the awardee securing an independent faculty position by the completion of Phase I.</p>	<p>Phase I: Follows NRSA salary guidelines based on years of experience</p> <p>Phase II: Up to \$85,000 per year</p>	<p>Phase I: research and career development costs up to \$25,000 per year</p> <p>Phase II: research and career development costs up to \$100,000 per year</p>	<p>Phase I: 2-3 years.</p> <p>Phase II: up to 3 years.</p> <p>Total duration of Phase I and II may not exceed 5 years.</p> <p>Not renewable.</p>
<p>K99/R00: Pathway to Independence Award</p>	<p>The intent of this program is to increase and maintain a strong cohort of new NIH-supported independent investigators. Investigators complete supervised research and publish findings during the mentored phase. Transition to the independent phase is contingent on the awardee securing an independent research position prior to completion of the mentored phase. Award recipients will be expected to obtain R01 support from the NIH during the independent phase of the award.</p>	<p>Up to \$50,000 per year.</p> <p>(Intramural candidates will be supported by DIR funds)</p>	<p>Up to \$20,000 per year.</p> <p>(Intramural candidates will be supported by DIR funds)</p>	<p>Up to 2 years for the mentored phase, up to 3 years for independent phase. Not renewable.</p>

Training for Diverse Populations:

Mechanism – Program ↓	Program Synopsis	Salary/ Stipend	Budget Info.	Duration/ Renewal
<p>NINDS Research Supplements to Promote Diversity in Health-Related Research</p>	<p>Supplemental funds to active NINDS research grants are available from the NINDS for supporting individuals a) from underrepresented ethnic or racial groups, b) from disadvantaged backgrounds, or c) with disabilities. This program is part of an NIH initiative to increase diversity in the biomedical research workforce. Institutions are encouraged to identify candidates who will increase diversity on a national or institutional basis. This program targets six educational groups: High School Students, Undergraduate Students, Post-Baccalaureate and Post-Master’s Degree Students, Graduate Students, Postdoctoral Candidates, and Faculty Members.</p> <p>In all cases, the proposed research experience must be an integral part of the approved, ongoing research of the parent grant and it must have the potential to contribute significantly to the research career development of the candidate. In addition to an outlined training plan for the candidate, the principal investigator must demonstrate that they are willing to provide appropriate mentorship.</p> <p>These programs have been designed to attract individuals from underrepresented groups into research careers and are not intended to provide an alternative or additional means of supporting individuals who already receive support from an NIH research grant, an NIH National Research Service Award (NRSA), or any</p>	<p>Salary for the different educational groups should be consistent with the institutional salary policies.</p>	<p>Varies depending on the career level of the candidate. Information can be found on FOA Section 111.3.</p>	<p>Minimum of 2 years/not renewable</p>

	other DHHS funding mechanism. Applications may be submitted at any time by investigators holding NINDS grants (see program announcement for eligible grant mechanisms). Though supplements are received on a rolling basis NINDS implemented three review cycles per fiscal year for funding decisions (see NOT-NS-08-004).			
Research Supplements to Promote Re-Entry into Biomedical and Behavioral Research Careers	The Office of Research on Women’s Health (ORWH), participating Institutes and Centers (ICs) of the National Institutes of Health (NIH), and the Office of Dietary Supplements (ODS) announce a continuing program for administrative supplements to research grants to support individuals with high potential to re-enter an active research career after a qualifying interruption for family or other responsibilities. The purpose of these supplements is to encourage such individuals to re-enter research careers within the missions of all the program areas of NIH. This program will provide administrative supplements to existing NIH research grants for the purpose of supporting full-time or part-time research by these individuals in a program geared to bring their existing research skills and knowledge up to date. Though supplements are received on a rolling basis NINDS implemented three review cycles per fiscal year for funding decisions. (see NOT-NS-08-004).__	Must be in accordance with the salary structure of the grantee institution	Up to \$10,000	1-3 years/not renewable.
<u>F31: Predoctoral Fellowships to Promote Diversity</u>	See Individual NRSA Fellowships for more information.			
<u>K01: NINDS Faculty Development Award to Promote Diversity in Neuroscience Research</u>	See Career Development Awards for more information.			
<u>K22: NINDS Advanced Postdoctoral Career Transition Award to Promote Diversity in Neuroscience Research</u>	See Career Development Awards for more information.			

Writing a Grant Application: An Informal Guide

1. Essentials

- a. Significance
- b. Sound, clear hypotheses
- c. Productivity and demonstration of feasibility -- high quality results and figures
- d. Logical development of experimental design – experiments address stated hypotheses
- e. Can you do everything you propose to do in the time requested -- “Overly Ambitious” is one of the most common criticisms of young investigators.
- f. Plan ahead and don't rush -- give yourself at least 2-3 months to prepare the grant application.
- g. Arrange with colleagues or mentors to review a first draft of your specific aims early (6 weeks or so). You want the harshest critiques before you submit.

2. Specific aims

- a. Do the aims address interesting and significant issues?
- b. Are they hypothesis-based?
- c. Are they "win-win" – i.e., will an outcome consistent with the null hypothesis still be a contribution to the field?

3. Preliminary results

- a. Preliminary results should support feasibility of study and hypotheses.
- b. Make sure that the major methods to be used in the proposed work are reflected by preliminary results. If you do not have expertise or preliminary results with a technique, make sure you list a solid, experienced consultant or collaborator and include a letter agreeing to the collaboration, and a specific statement about what the collaborator will contribute.
- c. Put time and effort into preparing meticulous figures, graphs, or tables; this is your chance to demonstrate rigor and organization that will increase the reviewer's confidence that you can carry out the project. This cannot be overemphasized: a high quality application reflects high quality work (and vice-versa).

4. Experimental design

- a. This is one of the most common places where the text is insufficient. This is not just a place to tediously list group sizes, detailed methods, etc. This is the place to demonstrate your ability to think knowledgeably and logically.
- b. Develop your aims; of all the sections this may well be the part of the grant application upon which you spend the most time.
- c. What happens if your first specific aim doesn't work out as you have predicted? Will aims 2, 3 and 4 then be rendered useless? Where do you go if the first step fails? Have multiple working hypotheses.

- d. One method that often works is to divide this section into subheadings after *each* specific aim is restated, as follows:
- Specific Aim #*
- i. **Rationale:** How does this design relate to your hypotheses? What is your reasoning (in detail)?
 - ii. **Methods:** List general approaches first, explaining why the methods you propose are the best available for your questions. (*caveat:* if you realize that you do not have the best, most direct methods for your questions, you need to rethink your aims or incorporate collaborators or new preliminary data showing feasibility with the necessary techniques.) **Don't forget to address statistical analysis.
 - iii. **Anticipated results:** You need to devote a great deal of thought, and text, to potential outcomes and their likelihood of realization. Explain how you will interpret the different outcome scenarios and how these results relate back to your hypotheses. This is an opportunity to demonstrate creativity and enthusiasm for the data to be obtained, and show that you have considered the interpretation of alternative outcomes.
 - iv. **Problems and pitfalls:** Be honest with yourself. If this section feels horribly uncomfortable, it is because you are probably trying an experiment that is not feasible. All experiments have pitfalls, but you should be able to recover from them in a satisfactory way. Explain the pitfalls, and how alternate approaches will be used to overcome them if they occur. Do not think that avoiding mentioning a pitfall is a good strategy - it usually doesn't work. The reviewer will very likely notice the pitfall and believe that you are not aware of it, decreasing confidence in your ability to conduct the study.

5. Timetable

This is a worthwhile exercise, but does not need to take up an inordinate amount of space. The idea is to take a serious look at the amount of work you've proposed and demonstrate to reviewers that this amount is appropriate.

6. Responsible Conduct of Research (RCR)

In order to receive an award, applicants must comply with the NIH RCR policy. Pay close attention to the instructions listed in the notice (NOT-OD-10-019: <http://grants.nih.gov/grants/guide/notice-files/not-od-10-019.html>).

7. Contact an NIH Program Director

Not all institutes support all grant mechanisms. Moreover, institutes use grant mechanisms differently. Be sure that an institute will support your research/training with the mechanism you are applying to. Institute websites and web links in program announcements describe institute interests. You should also contact an institute program director if you plan to apply for a training award other than an F32 (which all institutes support).

Common Mistakes in NIH Grant Applications

The five review criteria for most NIH grant applications are Significance, Approach, Innovation (not necessary, but the results should have compelling significance), Investigator and Environment:

Problems with Significance:

Not significant, exciting, or new research
Lack of compelling rationale
Incremental and low impact research

Problems with Approach:

Too ambitious, too much work proposed
Unfocused aims, unclear goals
Limited aims and uncertain future directions

Problems with Experimental Design:

Inappropriate level of experimental detail
Feasibility of each aim not shown
Little or no expertise with approach
Lack of appropriate controls
Not directly testing hypothesis
Correlative or descriptive data
Experiments not directed towards mechanisms
No discussion of alternative models or hypotheses
No discussion of potential pitfalls
No discussion of interpretation of data
Inadequate description of statistical approach/analyses

Problems with Investigator:

No demonstration of expertise or publications in approaches
Low productivity, few recent papers
No collaborators recruited or no letters from collaborators
Lack of funding

Problems with Environment:

Inadequate institutional support

NIH Websites

THE FUNDING COMPONENTS OF NIH

The NIH Homepage:
<http://www.nih.gov>

Homepages of the NIH Institutes, Centers & Offices:
<http://www.nih.gov/icd/>

THE NIH GUIDE FOR GRANTS AND CONTRACTS:

Program Announcements (PAs) and
Request for Applications (RFAs):
<http://www.nih.gov/grants/guide/index.html>

Institutes, Centers, & Offices at the NIH
<http://www.nih.gov/icd/>

NIH Grants Policy Statement
<http://grants.nih.gov/grants/policy/nihgps/>

THE APPLICATION PROCESS

NCI's Quick Guide to the Preparation of
NIH Grant Applications:
<http://deainfo.nci.nih.gov/extra/extdocs/gntapp.pdf>

Application Receipt, Referral and Review,
Center for Scientific Review:
<http://www.nih.gov/grants/funding/submissionschedule.htm>
and
<http://www.csr.nih.gov/>

NIH Grant Application Instructions, Guidelines and Forms:
<http://www.nih.gov/grants/forms.htm>

NIH Modular Grant Information, Q&A,
Sample Budget and Biosketch:
<http://www.nih.gov/grants/funding/modular/modular.htm>

NIAID "How To" website for developing a grant application:
<http://funding.niaid.nih.gov/researchfunding/grant/pages/aag.aspx>

THE REVIEW PROCESS

The Five Review Criteria for Most NIH applications:
<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-09-025.html>

Descriptions of Initial Review Groups at the
Center for Scientific Review:
<http://www.csr.nih.gov/review/irgdesc.htm>

NIH Center for Scientific Review Study Section Rosters:
<http://www.csr.nih.gov/committees/rosterindex.asp>

DATA ON ACTIVE GRANTS

Research Portfolio Online Reporting Tool (RePORT) of NIH
awarded grants
<http://projectreporter.nih.gov/reporter.cfm>

NIH eRA commons:
<https://commons.era.nih.gov/commons/>

THE SPECIAL PROGRAMS AT NIH

The K Awards:
<http://www.nih.gov/training/careerdevelopmentawards.htm>

Application Guidelines for the K Awards:
<http://grants.nih.gov/grants/funding/424/index.htm>

Ruth L. Kirschstein National Research Service Awards
Institutional Research Training Grants
Individual Fellowships
<http://grants.nih.gov/training/nrsa.htm>

R03/Small Grant Program
<http://www.nih.gov/grants/funding/r03.htm>

AREA or R15 for Non-Research-Intensive
Colleges and Universities:
<http://www.nih.gov/grants/funding/area.htm>

SBIR/STTR Homepage:
<http://www.nih.gov/grants/funding/sbir.htm>

Where to find Help

NINDS Office of Training, Career Development and Workforce Diversity

The NINDS supports training opportunities in basic, clinical and translational research. Career development programs (K awards) are designed primarily to support clinician-scientists doing either basic or clinical research, but are also used for other specialized purposes. Fellowships (F awards) are available for predoctoral and postdoctoral scientists, as well as for established investigators who wish to change career direction or gain new skills for their research. The NINDS Training website (http://www.ninds.nih.gov/funding/areas/training_and_career_development/index.htm) provides the following types of information:

- ❖ Grant mechanisms and other funding opportunities
- ❖ Policy updates affecting training and career development programs
- ❖ Application information and forms
- ❖ Program Contacts
- ❖ Grant-writing tips
- ❖ Events of Interest

How can I find out about grant opportunities at the NIH?

There are a variety of ways to find out about current funding opportunities offered by the NIH. If you know the Institute to target with your application, you can visit their website directly to find funding opportunities. A list of the NIH Institutes and their respective websites can be found here:

<http://www.nih.gov/icd/>

If you would like to search for a specific NIH funding opportunity or review new NIH program announcements, you can query the NIH Guide for Grants and Contracts:

<http://grants.nih.gov/grants/guide/index.html>

For all federal funding opportunities, you can query Grants.gov:

www.Grants.gov

The Career Award Wizard is designed to help applicants determine what Career (K) Award programs they may be eligible for based on their level and type of training:

<http://grants1.nih.gov/training/careerdevelopmentawards.htm>

New Table of Page Limits For all NIH funding opportunities:

http://grants.nih.gov/grants/forms_page_limits.htm

The F Kiosk is designed to help applicants discern which fellowship programs are appropriate for their career stage: http://grants1.nih.gov/training/F_files_nrsa.htm

The NIH New Investigator Resource Page provides timely updates regarding grant opportunities for new investigators:

http://grants1.nih.gov/grants/new_investigators/index.htm

Funding opportunities through the NIH Roadmap for Medical Research and the NIH Blueprint for Neuroscience Research are posted on their respective websites:

- ❖ NIH Roadmap: <http://nihroadmap.nih.gov/>
- ❖ NIH Blueprint: <http://neuroscienceblueprint.nih.gov/>

Loan repayment programs are available for some candidates.

- ❖ NIH Loan Repayment Program:

- ❖ <http://www.lrp.nih.gov>
- ❖ NINDS Loan Repayment Program: http://www.ninds.nih.gov/funding/areas/training_and_career_development/NINDS_Loan_Repayment_Guidelines.htm

How can I find out about training opportunities at the NIH?

There are opportunities for students, postdocs, clinicians, and other investigators to come to the NIH for a research training experience.

- ❖ For opportunities across the NIH: <http://www.training.nih.gov/>
- ❖ For opportunities at NINDS: <http://intra.ninds.nih.gov/training.asp>

What must I know before I apply?

After identifying grant opportunities that suit your research interests and career stage, familiarize yourself with appropriate forms and deadlines. You may also want to contact program staff to ensure that the proposed research is in line with the mission of the Institute(s) targeted by your application.

NIH Forms and Applications

<http://grants.nih.gov/grants/forms.htm>

Grant Submission Deadlines and Review Timelines

<http://grants.nih.gov/grants/funding/submissionschedule.htm>

Electronic Submission of Applications General Information:

<http://era.nih.gov/ElectronicReceipt/index.htm>

Timeline for Required use of Electronic Submission:

http://era.nih.gov/ElectronicReceipt/files/Electronic_receipt_timeline_Ext.pdf

To apply for a grant, your organization must be registered with Grants.gov:

www.grants.gov

The NIH eRA Commons allows applicants to track the status of their application and monitor their award. Registration is required:

<https://commons.era.nih.gov/commons/>

Where can I find grant-writing tips?

Several Institutes have developed materials to guide new investigators through process of grant-writing. A few of these resources are listed below with a reference to the

authoring Institute.

Grants Tutorials (NIAID)

<http://funding.niaid.nih.gov/researchfunding/grant/pages/aag.aspx>

Tips for new NIH Grant Applicants (NIGMS)

<http://www.nigms.nih.gov/Research/Application/Tips.htm>

Common Mistakes in NIH Applications (NINDS)

http://www.ninds.nih.gov/funding/grantwriting_mistakes.htm

Grant Writing: A 12-Step Program (NIMH)

http://www.ninds.nih.gov/funding/NLD_SfN_Oct_2005.pdf

A Short Guide to the Preparation of an NIH R01 Grant Applications (NCI)

<http://deainfo.nci.nih.gov/extra/extdocs/gntapp.pdf>

Understanding Peer Review

Several online resources are available to demystify the review process.

The Peer Review Process

<http://cms.csr.nih.gov/AboutCSR/OverviewofPeerReviewProcess.htm>

Video on Peer Review at NIH

<http://cms.csr.nih.gov/ResourcesforApplicants/InsidetheNIHGrantReviewProcessVideo.htm>

Review Group Descriptions

<http://cms.csr.nih.gov/PeerReviewMeetings/CSRIRGDescription/>

Study Section Rosters

<http://www.csr.nih.gov/Committees/rosterindex.asp>

Contacts:

Be sure to review the contact list associated with the funding opportunity announcement through which you are applying.

Institute-specific requirements and contacts for parent Career Award Programs

K01: http://grants.nih.gov/grants/guide/contacts/parent_K01.html

K08: http://grants.nih.gov/grants/guide/contacts/parent_K08.html

K23: http://grants.nih.gov/grants/guide/contacts/parent_K23.html

K25: http://grants.nih.gov/grants/guide/contacts/parent_K25.html

K99/R00: http://grants.nih.gov/grants/guide/contacts/parent_K99_R00.html

K02: http://grants.nih.gov/grants/guide/contacts/parent_K02.html

K24: http://grants.nih.gov/grants/guide/contacts/parent_K24.html

In addition, each Institute has appointed contact persons for Extramural (E) and Intramural (I) Training Programs: http://grants.nih.gov/training/tac_training_contacts.doc

Other useful websites:

NIH OER Human Subjects Website

<http://grants1.nih.gov/grants/policy/hs/index.htm>

NIH OER Office of Laboratory Animal Welfare Website

<http://grants2.nih.gov/grants/olaw/olaw.htm>

NIH Office of Research Integrity Website

<http://ori.dhhs.gov/>

Howard Hughes Medical Institute (HHMI) Materials for Successful Laboratory Management

<http://www.hhmi.org/resources/labmanagement/resources.html>

M System Map

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 TTY Phone: 202/638-3780

- ## Legend
- Red Line • Glenmont to Shady Grove
 - Orange Line • New Carrollton to Vienna/Fairfax-GMU
 - Blue Line • Franconia-Springfield to Largo Town Center
 - Green Line • Branch Avenue to Greenbelt
 - Yellow Line • Huntington to Fort Totten



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 AREA TRANSIT AUTHORITY

REV 10/27/18

- No Smoking
- No Eating or Drinking
- No Animals (except service animals)
- No Audio (without earphones)
- No Litter or Spitting
- No Dangerous or Flammable Items