Strategies and Career Resources for Postdocs

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Strategies for a Successful Postdoctoral Traineeship

1. Publication
2. Oral Communication
3. Getting Funded
Strategies for a Successful Postdoctoral Traineeship

1. Publication
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Publication without losing sight of the joy of discovery
The Idea
Discovery Favors the Prepared Mind

Maus mit Käse: Ohne Kv1.3-Protein duftet der Happen noch besser.

“Neuron” (Bd. 41, S. 389 - 404). Den Nagem fehlt das Protein mit der Bezeichnung Kv1.3, das bei der Übertragung der Informationen von der Nase zum Gehirn eine wichtige Rolle spielt.

Falscher Asteroiden-Alarm: „Rufen wir den Präsidenten an?“

Forschungsbetreuung: Daten-Thrasher behält Professorentitel

Nebenwirkung: „Wir brauchen einen McCain“

What are the logistics of publication for a postdoc?

1. Need first author publication on 2 or more papers. After the second year of your postdoctoral fellowship, you need periodic consistency.

2. You need a foundation of quality publication in your own field that will support feasibility for a fundable project.

3. Careful, planned experiments drawn together for a full-length manuscript (cohesive story).

4. Need to have multiple pots on the stove.
Creating an Integrated Research Plan

“DREAM PAPER” vs. “Set of fragmentary observations”

1. Think graphically (pencil then software)
2. Sketch out an encompassing hypothesis
3. Generate questions as you analyze your results
4. Additional clarifying experiments
5. Figures >> Methods >> Introduction >> Results >> Discussion >> Abstract >> Title >> Cover Letter
6. First authors write the first draft
7. First authors send to colleagues and revise
Therefore we anticipated that mitral cells contained in slices prepared from Kv1.3-null mice would be unresponsive to insulin-induced spike frequency changes. We first screened wild-type mice with a more highly-selectively blocker of Kv1.3 that binds the vestibule of the channel at pM affinity. Under current-clamp mode, application of XpM-ShK186 (XpM) significantly increased the firing frequency of mitral cell neurons by rapidly eliminating the pausing between spike clusters (Supplemental Figure 3A), to exhibit a firing pattern of firing not unlike observed in the presence of ShK186 was similar to that of mitral cells obtained from Kv1.3-null mice (see Supplemental Figure 4). Under low voltage-clamp recordings, application of XpM-ShK186 blocked 70% of the outward current in mitral cells that were additionally pretreated with XnM-2.5 (XnM) to block contaminating contributions from voltage-gated sodium channels (Supplemental Figure 3B). Subsequent application of insulin elicited a decrease in peak current amplitude of only X pA, representing only X percent of the total current (data not shown). Since bath application of insulin to cells not pretreated with toxin causes a reduction in peak current amplitude of X pA, or X percent of the control current, only a minor amount of unidentified current is modulated by insulin that is not contributed by Kv1.3 (Supplemental Figure 3C). In fact, consistent with these observations, the firing behavior of mitral cells in slices that were prepared from Kv1.3-null mice and recorded in current-clamp mode were largely insensitive to bath the application of insulin (Figure 2D,E). Recordings from slices obtained from Kv1.3-null mice have not yet been reported for the slice configuration. Here we show that, in comparison, wild-type mice, mitral cells with a gene-targeted deletion of Kv1.3 have an increased sensitivity to applied current stepping to lower current injections (lower threshold to first spike), display a more depolarized resting membrane potential, an increased firing frequency, and a concomitant decreased ISI, a decreased time to latency for the first spike, and a decreased pause duration between spike clusters (Supplemental Figure 4). Basal biophysical values are compared across genotypes in Supplemental Table 2.
How can you generate support and refine your planned publication?
Submitting and Resubmitting

1. What is a pre-submission inquiry?
   a. abstract
   b. 500 word cover letter
   c. meeting
2. Navigating the review and comments to reviewers
3. What is a “cost-benefit analysis”?
4. What does it mean to take the “high road”?
5. What if you are asked to be a reviewer?
2. **Comment:** Why serial sections are not performed to determine the exact location the costal-caudal and in latero-median axes?

**Response:** From both our whole mount and cryosections, it is evident that the location of the glomerular projection is not grossly modified. There are very refined software programs that are now available to perform the determination of the precise costal-caudal and latero-median axes (Diego Restrepo Laboratory). These determinations are extremely time consuming and we judge pragmatically that we would be confirming a non effect. It was decided that this degree of quantification would not be a good time investment.

3. **Comment:** [for the M72 glomerulus in sections on page 11] The description of quantification analysis is uncomplete. It is necessary to give: cryosection number/animal like in page 12 for immunodetection of Ki67 protein.

**Response:** We disagree. When we are immunodetecting Ki67 protein, then we are making our statistical metric by using a sampling of the population. Therefore the range of the sections sampled per animal is necessary to indicate depth and quantity of the measurement. When we are sampling the number and cross sectional area of the M72 glomerulus, there is not a range of sections. We are locating that particular M72 glomerulus (genetically identified) within a single section and then measuring it in that particular animal. Only the number of animals or half bulbs sampled is necessary.

4. **Comment:** It seems that the SDS-PAGE Western blot analysis of the two proteins Golf and MOR28 are not extracted from the same sample tissue, since number of mice is different for the two proteins.

**Response:** This is correct. We sampled Golf in 12 membrane preparations (6 CF, 6 MHF) and MOR28 in 28 preparations (14 CF, 14 MHF). MOR28 was sampled more frequently because its small size (we could cut the nitrocellulose when screening for higher molecular weight proteins).
Increasing your visibility after publication

1. Symposia or talks at conferences
2. University media site
3. Laboratory website
4. Cover art
5. Why such self-promotion?
   a. Federal funding agencies
   b. Next reviewer
   c. Potential collaborators
   d. Future laboratory members
   e. Reverse invitations

Thiebaud et al., 2014
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Oral Communication
1. Know your audience
2. Guide the intelligent people in front of you
3. There are many types of talks – know what is expected
   a. 12 minutes
   b. 50 minute research
   c. classroom teaching
   d. chalk talk
   e. International talks
4. How should you prepare?
5. How to you make transitions?
6. Never go over time
7. Best format for answering questions
Insulin resistance following maintenance on a moderately high-fat diet (MHF)

Marks et al., 2009. J. Neurosci
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Find Your Niche

Potassium Ion Channel Camp

Chemical Senses Camp

Bridged via Neuromodulation
Clinical Health Impact

Tracking Insulin to the Mind

Although the idea is controversial, recent evidence suggests that insulin may be needed for normal brain functions—including learning and memory.
Getting Funded

1. Finding the best mechanism
   NIH = R03 (7 years); K99Ro0 (5 years), F32/T32 (3 years total), R15 (AREA award).
   Co-investigator or Co-PI
   AHA, NSF, private foundations

2. Attend workshops on campus and professional conferences
   (Travel Awards July 1 and Jan 1)

3. Get a copy of a funded proposal and an unfunded proposal in your field for the mechanism for which you are applying.

4. A grant is 3x the work load (minimally) than a manuscript.
Getting Funded

5. When is the best time to submit?

6. Criteria for rating a grant application are generally published.

7. Read the grant guidelines for good grantsmanship and new regulations.

8. Clear strategies, good scientific writing, innovation of both thought, technologies, and analysis. What are the 4 Cs?

9. Same guidelines as a manuscript – to get pre-submission inquiry (Contact Program Officer!), to achieve internal feedback (What is a Mock Study Section?), and how to respond to reviewer comments (but cannot change “journals”).
Thank you!

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http://opda.fsu.edu/
A. Travel Awards July 1 and Jan 1
B. Weekly Digest
C. Free memberships to NPA and versatile PhD
FSU List Serv

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