**Goals:**
The goal of this class is to prepare each student to write and defend a grant proposal, which is a degree requirement. This is a half-credit class and is graded. Your candidacy exam is designed to prepare you for thinking about and performing cutting edge research. This is the time when you dig into the literature, define a problem of your own, and articulate what you will do, what you will learn and why it’s important. This is a large undertaking and you should expect this process to be:

- **Challenging** - we expect you to do something you have likely not done before.
- **Time-consuming** – this is a lot of stimulating work.
- **Rewarding** - this will provide you with the intellectual underpinning for your graduate experience, regardless of whether your proposal focuses on your actual thesis project or not.

A major goal of this class is to teach you to think critically about a research problem and to translate this into a compelling research proposal. You will learn to do this by (1) working on the mechanics of writing the proposal, (2) reviewing past submitted fellowship proposals (in a mock study section format) to learn the do’s and don’ts about preparing a compelling proposal and (3) preparing compelling specific aims for your own proposal.

**Grading:**
You will have two written assignments:
1. Provide written critiques of 2 grants (due by noon on day of critiques to RM, KL, HN)
2. Write (and rewrite) your specific aims (see syllabus for specific assignments)
Grades will be based on your paragraph rewrite, written and oral critiques, written and oral presentation of your specific aims and class participation.

**Syllabus**
Classes will be held on Mondays (2:00-4:00) and Fridays (1:00-3:00) in room BRB 801.

*** Assignment for 1/13: Read assigned grants for Mock study section I
[Lemmon_4 (Narayan) and Degrado_3 (Reig)]

Friday 1/13  RM, HN

*Introduction, Course Organization*
Elements of a proposal - For your candidacy exam you need to write a proposal.
- How best to communicate science? Think backwards.
- What does a proposal look like?
  Overview: Abstract, Specific Aims, Significance, Innovation, Approach
- Abstract: Summary of the 4 sections described below.
- Specific Aims: 1 page, spell out the overall goal (hypothesis/question), describe why it is important and how you will achieve the goal.
  How do you formulate and address a meaningful hypothesis?
  What is the difference between a hypothesis-driven proposal (good), a technology-driven proposal (good), and a “fishing expedition” (bad)?
- Significance: ~1 page, convey why your goal is important.
• Innovation: ~1/3-1/2 page, highlight innovative features of the technical or conceptual aspects of your proposal.
• Approach: ~4 ½ pages, describe how you will carry out the proposed experiments.

Mock Study Section - I
• Discussion of how proposals are reviewed at the NIH?
• KL and RM will review the Narayan and Reig grants as examples for your own study sections
• Grants will be assigned for future Mock Study Sections

*** Assignment for 1/23: Reading assigned on technical writing (Gopen & Swan)

Monday 1/16 KLK Holiday – No class

Friday 1/20, Monday 1/23, HN
Writing clearly, coherently, and persuasively: from word-choice to paragraph organization

Friday 1/27 NO CLASS (BMB Student Recruitment)

Monday 1/30 HN
Continued: Writing clearly, coherently, and persuasively: from word-choice to paragraph organization

*** Assignment: Read, review and score grants that you are assigned for your mock study section.

Students: Laura Agosto-Rosa (LAR), Sarah Bond (SB), Caroline Davis (CD), Daniel DeHelian (DD), Rina Fujiwara (RF), Keerthana Gnanapradeepan (KG), Krystal Haislop (KH), Nicole Kerstetter (NK), Erin Masucci (EM), Leann Miles (LM), Hannah Richter (HR), Trevor van Eeuwen (TV), Sanjula Wickramasinghe (SW), Austin Zimmet (AT)

Friday 2/3 RM, KL
Mock Study Section II (review 3 grants)
You will participate in a study section in which you will present, defend/attack, and score the proposals you were assigned.

*** Reviewers: LAR, SB - Black_121013; CD, DD - Lynch_1_121113;
RF, KG - Marks_121013
Written critiques emailed by noon 2/3 to RM, KL, HN.

Friday 2/6 RM, KL
Mock Study Section III (review 3 grants)
You will participate in a study section in which you will present, defend/attack, and score the proposals you were assigned.

*** Reviewers: KH, NK - Birnbaum_Lab_1; EM, LM - Marmorstein_1_122013;
HR, TV - MSTP_1_121113;
Written critiques emailed by noon 2/6 to RM, KL, HN.

*** Assignment Due 2/13 by 6 pm: LAR and SB email their specific aims to RM, KL, and HN for comments.

Friday 2/10 NO CLASS (BMB Student Recruitment)
Monday 2/13   RM, KL
Mock Study Section IV (review 4 grants)
You will participate in a study section in which you will present, defend/attack, and score the proposals you were assigned.

***  SW, AT - Kohli_010515; SB, CD - Boesze-Battaglia_Lab_1
DD, LAR - Radhakrishnan_Lab_1; KG, KH - Wand_Lab_1;
Written critiques emailed by noon 2/13 to RM, KL, HN.
***
Assignment Due 2/17 by 6 pm: CD and DD email their specific aims to RM, KL and HN for comments.

Friday 2/17   RM, KL
Mock Study Section V (review 4 grants)
You will participate in a study section in which you will present, defend/attack, and score the proposals you were assigned.

***  NK, RF - Lynch_2_121113; TV, EM - Marmorstein_3_122013
LM, HR – Ferguson_Lab_2; AT, SW - Lemmon_Lab_6
Written critiques emailed by noon 2/17 to RM, KL, HN.
***
Assignment Due 2/20 by 6 pm: RF and KG email their specific aims to RM, KL and HN for comments.

Monday 2/20   RM, KL, HN
Oral presentation of Specific Aims (LAR, SB)
Those in Group 1 will give 15 minute presentation of their Specific Aims, with a maximum of two slides, and receive feedback from students, KL, RM, and HN.

***  Assignment Due 2/20 by noon: LAR and SB email their specific aims to faculty & students.
***
Assignment Due 2/20 by 6pm: KH and NK email their specific aims to RM, KL, and HN for comments.

Friday 2/24   RM, KL, HN
Oral presentation of Specific Aims (CD, DD)
Those in Group 2 will give 15 minute presentation of their Specific Aims, with a maximum of two slides, and receive feedback from students, KL, RM, and HN.

***  Assignment Due 2/24 by noon: CD and DD email their specific aims to faculty & students.
***
Assignment Due 2/24 by 6 pm: EM and LM email their specific aims to RM, KL, and HN for comments.

Monday 2/27   RM, KL, HN
Oral presentation of Specific Aims (RF, KG)
Those in Group 3 will give 15 minute presentation of their Specific Aims, with a maximum of two slides, and receive feedback from students, KL, RM, and HN.

***  Assignment Due 2/27 by noon: RF and KG email their specific aims to faculty & students.
***
Assignment Due 2/27 by 6 pm: HR and TV email their specific aims to RM, KL, and HN for comments.

***  Assignment Due 2/27 by 6 pm: LAR and SB email revised specific aims to RM, KL and HN if necessary.
Friday 3/3  RM, KL, HN

Oral presentation of Specific Aims (KH, NK)
Those in Group 4 will give 15 minute presentation of their Specific Aims, with a maximum of
two slides, and receive feedback from students, KL, RM, and HN.

*** Assignment Due 3/3 by noon: KH and NK email their specific aims to faculty & students.
*** Assignment Due 3/3 by 6 pm: SW and AT email their specific aims to RM, KL, and HN
for comments.
*** Assignment Due 3/3 by 6 pm: CD and DD email revised specific aims to RM, KL and
HN if necessary.

Monday 3/6  RM, KL, HN

Oral presentation of Specific Aims (EM, LM)
Those in Group 5 will give 15 minute presentation of their Specific Aims, with a maximum of
two slides, and receive feedback from students, KL, RM, and HN.

*** Assignment Due 3/6 by noon: EM and LM email their specific aims to faculty & students.
*** Assignment Due 3/6 by 6 pm: RF and KG email revised specific aims to RM, KL and
HN for comments if necessary.

Friday 3/10 RM, KL, HN

Oral presentation of Specific Aims (HR, TV)
Those in Group 6 will give 15 minute presentation of their Specific Aims, with a maximum of
two slides, and receive feedback from students, KL, RM, and HN.

*** Assignment Due 3/10 by noon: HR and TV email their specific aims to faculty & students.
*** Assignment Due 3/10 by 6 pm: KH and NK email revised specific aims to RM, KL and
HN for comments.

Monday 3/13 RM, KL, HN

Oral presentation of Specific Aims (SW, AT)
Those in Group 7 will give 15 minute presentation of their Specific Aims, with a maximum of
two slides, and receive feedback from students, KL, RM, and HN.

*** Assignment Due 3/13 by noon: SW and AT email their specific aims to faculty & students.
*** Assignment Due 3/13 by 6 pm: EM and LM email revised specific aims to RM, KL and
HN for comments if necessary.

Friday 3/17 RM, KL, HN

Additional discussion of specific aims if needed.

*** Assignment Due 3/17 by noon: Presenters email their specific aims to faculty & students.
*** Assignment Due 3/17 by 6 pm: HR and TV email revised specific aims to RM, KL and
HN for comments if necessary.

Monday 3/20 RM, KL, HN

Additional discussion of specific aims if needed.

*** Assignment Due 3/20 by noon: Presenters email their specific aims to faculty & students.
*** Assignment Due 3/20 by 6 pm: SW and AT email revised specific aims to RM, KL and
HN for comments if necessary.
Additional Important Deadlines:
March 24  Obtain approval of final title and specific aims from exam committee.
April 3   Distribute written proposal to the committee (at least two weeks before exam)
April 17 – May 5  Oral Exams Take Place
Friday June 2  Last date to complete any 2nd attempts of either written or oral exams.

Candidacy Exam Advisory Group (preliminary, to be confirmed)
The chair of your committee will be assigned from this group of BMB faculty members

Yair Argon                Kristen Lynch
Paul Axelsen              Ronen Marmorstein
Ben Black                 Brian Salzberg
Ben Garcia                James Shorter
Yale Goldman              Kim Sharp
Mark Goulian              Dave Speicher
Harry Ischiropoulos       Greg Van Duyne
Rahul Kohli               Sergei Vinogradov
Michael Lampson           Josh Wand
Mitch Lewis
Mike Ostap
Ravi Radhakrishnan
Heiner Roder