FALL 2021 QC'S

HARVARD
DIVISION OF MEDICAL SCIENCES

# Fall 2021
# Quarter Courses (QC)

**Referred to as "Half Term" in GSAS Academic Calendar**

***Fall Session 1 (Half-Term QC's): 9/1/21 – 10/15/21***
***Fall Session 2 (Half-Term QC's): 10/18/21 – 12/2/21***

## ENROLLMENT DEADLINES

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|---|---|
| **Check-in Opens** | **Aug. 2** |
| **Course Registration** | **Aug. 16** |
| **Check-in DDline** | **Aug. 16** |
| **Fall 1 Course Reg. Deadline** | **Aug. 26** |
| **Fall 1 Begins** | **Sept. 1** |
| **Fall 1 Add/Drop Deadline** | **Sept. 9** |
| **Fall 2 Begins** | **Oct. 18** |
| **Fall 2 Course Reg. Deadline** | **Oct. 22** |
| **Fall 2 Add/Drop Deadline** | **Nov. 4** |

## GSAS ACADEMIC CALENDAR

https://registrar.fas.harvard.edu/gsas-academic-calendar

## REMINDERS

You **cannot register** for courses until you CHECK-IN (or go to: https://registrar.fas.harvard.edu/online-check-in)

Register for **16 credits** for full-time student status and health insurance eligibility

Register by going to https://my.harvard.edu/

For questions, contact: dms_courses@hms.harvard.edu

*Revised 9/2/2021*

**BCMP 308QC Cell Fate Decisions in Development & Disease**
Alan B. Cantor

**CELLBIO 306QC Teaching 100: The Theory & Science of Teaching**
Bradley Coleman

**HBTM 302QC Imaging and Microscopy Methods in Biology & Medicine**
Lev Perelman

**IMMUN 307QC Cancer Immunology**
Kai Wucherpfennig, Stephanie Dougan, Philip Kranzusch, Judith Agudo

**IMMUN 319QC Immunopathogy and therapeutics of inflammation and resolution**
Timothy Hla, Charles Serhan

**IMMUN 320QC Innate immunity and viral infection of the lung. Coronaviruses, flu and lung superinfections**
Ivan Zanoni

**MED-SCI 300QC Conduct of Science**
Kristin White

**MED-SCI 302QC Conduct of Science Refresher**
Kristin White

**MED-SCI 312QC Graduate Training in the Biomedical Sciences**
Bradley Coleman

**MED-SCI 316QC PhD Pathfinder**
Joseph Arboleda, Jane Riccardi

**NEUROBIO 306QC Quantitative Methods for Biologists (AUGUST BOOTCAMP)**
Michael Springer, Richard T. Born

**NEUROBIO 308QC Thinking about Data: Statistics for the Life Sciences**
Richard T. Born, Brian Healy

**NEUROBIO 309QC The Molecular Pathology & Current Therapies for Retinal Diseases**
Dong Feng Chen, Petr Baranov, Corinna Bauer, Kinsang Cho, Shelley Fried, Daniel Sun, Mengyu Wang

**NEUROBIO 311QC Eye, Brain & Vision: Classics in Visual Neuroscience**
Richard Born, Jan Drugowitsch, Talia Konkle, Mark Andermann, Michael Do, Margaret Livingstone, Joshua Sanes, Chinfei Chen

**NEUROBIO 315QC Human Neuroanatomy & Neuropathology**
Matthew Frosch, Jean Augustinack

**NEUROBIO 322QC Advances in synaptic, cellular and circuit neuroscience**
Pascal Kaeser, Wade Regehr

**SHBT 301QC Introduction to Speech & Hearing Laboratories**
Bertrand Delgutte

# Biological Chemistry & Molecular Pharmacology

## BCMP 308QC Cell Fate Decisions in Development & Disease

Alan B. Cantor

2 units. Enrollment limited to 15. Instructor consent required.
W, 1:30pm - 3:30pm
**Meeting Dates:** Sept. 8 – Nov. 3, 2021
**Meeting Location**: Karp Family Research Building, Boston Children's Hospital, 7th Floor Conference Room

This quarter course will offer students an in-depth examination of current knowledge regarding mechanisms of cell fate decisions. It will examine these processes in the context of developmental cell plasticity, cellular reprogramming, and cancer. This will primarily be a literature-based course with examination and discussion of key studies in the field. Concepts involving the instructive role of lineage-specific transcription factors, transcription factor cross-antagonism, gene regulatory networks, multilineage priming, progenitor cell heterogeneity, pioneer factors, epigenetics, chromatin accessibility, chromatin remodeling factors, "super-enhancers," stem cell bias, lineage identity maintenance, mitotic bookmarking, non-coding RNAs, cell polarity, asymmetric cell division, lateral inhibition, lineage plasticity, and cellular reprogramming will be explored. These ideas will be examined in the context of several different tissue systems and organisms.

**Course Head**: Alan Cantor, alan.cantor@childrens.harvard.edu
**Other instructors**: Jason Buenrostro, Ramesh Shivdasani, Thorsten Schlaeger, Zhe Li

# Cell Biology

## CELLBIO 306QC: Teaching 100: The Theory & Science of Teaching

Bradley Coleman

2 Units. Enrollment limited to 20. Instructor consent required.
TH
**Remote section**: 8:30am - 10:30am
**In person section**: 2:00pm -4:00pm

**Meeting Dates:** Sept. 16 – Nov. 18, 2021
**Meeting Location:** In person section: TMEC 128 Learning Studio (Castle)

For many graduate students and medical educators, teaching will be part of their career, whether as mentoring, formal classroom teaching, or teaching in the hospital. In addition, the theory and research evidence accumulating in the disciplines of cognitive psychology, neuroscience, and from STEM classrooms, has turned the question of "How do we best teach science and medicine?" into its own scientific discipline. The Theory and Science of Teaching focuses on understanding why certain teaching methods are effective by examining the scientific research and theoretical frameworks that support these methods. We will read and discuss foundational educational and cognitive psychology texts and primary literature, and then develop course materials that allow us to put these ideas into practice.

**Class Note**: Class will meet for 2 hours of synchronous discussion and learning activities each week. The in-person section will meet Thursdays from 2:00-4:00 in Longwood and is intended for PhD students who must take their classes in-person. The remote section will meet 8:30-10:30 over Zoom and is reserved for master's students. The content of the sections will be the same and both will share identical asynchronous learning components. This will include watching videos, reading a variety of materials, participating in discussion boards, creating sample materials, and writing learning reflections. The synchronous and asynchronous components combine to meet the course objectives and are equally important to students' learning.
Class begins September 16th with the release of the first asynchronous module. The first synchronous class meeting is September 30th.
**Course Note**: The course has been designed as a companion to Genetics 302QC: Teaching 101, but neither course is a prerequisite of the other.
**Recommended Prep**: Make It Stick, by Brown, Roediger and McDaniel is required pre-reading and should be completed before the first day of class on September 30th. A required asynchronous 'module 0' will be released on Canvas, September 16th.

**Course Head**: Bradley Coleman, Bradley_Coleman@hms.harvard.edu

## Human Biology & Translational Medicine

### HBTM 302QC Imaging and Microscopy Methods in Biology & Medicine
Lev Perelman

2 units. Enrollment limited to 15. Instructor consent required.
TH, 3:00pm - 5:00pm

**Meeting Dates:** Sept. 16 – Dec. 2, 2021
**Meeting Location:** TMEC 304 Classroom (Hinton)

This quarter course will introduce students to modern imaging modalities used in biology and medicine, with emphasis on modalities most frequently employed in cellular and molecular biology. The course will offer an overview of the basic principles of light and electron microscopy and explain their resolution limits and sources of contrast. We will discuss modality-specific functionally relevant fluorescence molecular probes which can be used for live cell imaging. The course will provide a detailed review and theory of operation of modern advanced light microscopy techniques such as confocal, line-scanning, light sheet, STED, light scattering, multi-photon and superresolution microscopy. We will then discuss Raman and light scattering spectroscopy methods for monitoring induced pluripotent stem cell differentiation, genetic targeting in microscopy and CRISPR-based photoactivatable transcription systems and basic concepts of optogenetics. We will review specific optogenetic actuators and sensors, modern light delivery techniques and various applications from investigating brain functions to cardiac optogenetics. We will also offer an overview of medical imaging techniques, such as ultrasound, X-ray CT, MRI, PET/SPECT, and ultrasound imaging, along with emerging optical imaging and spectroscopy methods. Lectures will be supplemented by visual demonstrations of the microscopy systems and hands-on laboratory work and discussions of the operation principles of those systems.

**Course Head:** Lev Perelman, lperelman@fas.harvard.edu

## Immunology

### IMMUN 307QC Cancer Immunology

Kai Wucherpfennig, Stephanie Dougan, Philip Kranzusch, Judith Agudo

2 units. Enrollment limited to 20. Instructor consent required.
M, 4:00pm - 6:00pm
**Meeting Dates:** Nov. 1 – Dec. 13, 2021
**Location:** Modell Center, 100A

There have been many exciting recent developments in the cancer immunology field, and multiple therapeutic approaches have shown efficacy against diverse types of cancer. This course will emphasize new mechanistic insights, specifically on the following topics: mechanisms of spontaneous protective anti-tumor immunity; key effector cell populations of

anti-tumor immunity; innate immune pathways in tumor immunity; inflammation and tumor microenvironment; immunosuppressive mechanisms in tumor immunity; targeting of inhibitory receptors; cancer vaccines.

**Course Note:** Must be PhD student at Harvard or postdoctoral fellow

**Course Head:** Kai Wucherpfennig, kai_wucherpfennig@dfci.harvard.edu
**Other Instructors:** Dougan, Stephanie, Kranzusch, Philip, Agudo, Judith

## IMMUN 319QC Mechanisms and therapeutics of inflammation and resolution

Timothy Hla, Charles Serhan

2 units.
TH, 10:00am – 12:00pm
**Meeting Dates:** Oct. 7 – Dec. 2, 2021
**Meeting Location:** Modell Center 2nd floor conference room, Rm 258

Even though physiological inflammation undergoes active resolution processes to return to normal homeostasis, abnormalities in specific mechanistic processes involving immune, vascular and parenchymal cells lead to many diseases ranging from asthma, fibrosis, cancer, autoimmunity to cardiovascular diseases. This course will focus on multicellular interaction networks, lipid mediators and signaling mechanisms in inflammatory and resolutive pathobiology. Topics such as pathogenetic mechanisms, mediators, Omics strategies and cellular heterogeneity will be covered. Discrete mediator networks, namely, eicosanoids, SPMs, S1P, and LPA that are therapeutically tractable and used to treat diseases will be highlighted. In addition, development of novel therapeutics to control inflammatory and resolution pathology will be discussed.

**Course Head:** Timothy Hla, Timothy.Hla@childrens.harvard.edu
**Other Instructors:** Charles Serhan

## IMMUN 320QC Innate immunity and viral infection of the lung. Coronaviruses, flu and lung superinfections

Ivan Zanoni

2 units.
T, 10:30am – 12:30pm

**Meeting Dates:** Nov. 9 – Nov. 30, 2021
**Meeting Location:** Modell 100A Fred S. Rosen Lecture Hall

The course will focus on the innate immune response elicited in the lung in response to viral infections. Particular focus will be given to RNA viral infections such as coronaviruses and influenza viruses. The role of innate immune cells, interferons, and other immune mediators in resolving and/or aggravating the viral infection will be discussed. Also, how an initial response against the virus facilitates the development of secondary bacterial superinfections will be analyzed.

**Course Notes**: Basic knowledge of immunology is expected in order to follow the content of this course.

**Course Head:** Ivan Zanoni, Ivan.Zanoni@childrens.harvard.edu

## Medical Sciences

### MED-SCI 300QC Conduct of Science (REQUIRED for G2 students)

Kristin White

2 Units.
**Section Meeting Dates and Locations:** To be determined by specific section leaders
**Lecture Dates and Locations**:

Research Integrity: It's a Matter of Public Trust
Tuesday, September 28, 2021, at 3:00-4:30 p.m. EDT

Conflict Resolution Skills for the Researcher
Tuesday, October 12, 2021, at 3:00-4:30 p.m. EDT

Inclusive Excellence in Research: Creation of a Vibrant, Scientific Global Community
Tuesday, October 26, 2021, at 5:00-6:30 p.m. EDT

This course is a required course for all DMS students and all who receive support from NIH training grants. The goal of this course is to inform students about the appropriate conduct of research and the many ethical and social problems that they may encounter during their research career in graduate school. The course consists of three lectures for the entire class and several highly interactive sessions with a small group of fellow students moderated by a faculty

member. Some of the issues that will be discussed in this course include appropriate methods of collecting laboratory data, issues dealing with research misconduct, interactions with members of the laboratory and the mentor, and the ethical role of the scientist in society.

**Course Notes:** All current G2 students must register for this course on their Fall Semester study cards. Specific enrollment instructions will be sent to current G2s and other eligible students prior to the first day of class. Please contact Bethany_Krevat@hms.harvard.edu, for enrollment inquiries. **Restricted to HILS graduate students within programs on the Longwood campus.**

**Course Head:** Kristin White, Kristin.White@mgh.harvard.edu
**Course Administrator:** Bethany_Krevat@hms.harvard.edu

## MED-SCI 302QC Conduct of Science Refresher (REQUIRED for G6 students)

Kristin White

2 Units.
**Section Meeting Dates and Locations:** To be determined by specific section leaders
**Lecture Dates and Locations**:

Research Integrity: It's a Matter of Public Trust
Tuesday, September 28, 2021, at 3:00-4:30 p.m. EDT

Conflict Resolution Skills for the Researcher
Tuesday, October 12, 2021, at 3:00-4:30 p.m. EDT

Inclusive Excellence in Research: Creation of a Vibrant, Scientific Global Community
Tuesday, October 26, 2021, at 5:00-6:30 p.m. EDT

This course is a required course for all DMS students and all who receive support from NIH training grants. The goal of this course is to inform students about the appropriate conduct of research and the many ethical and social problems that they may encounter during their research career in graduate school. The course consists of three lectures for the entire class and several highly interactive sessions with a small group of fellow students moderated by a faculty member. Some of the issues that will be discussed in this course include appropriate methods of collecting laboratory data, issues dealing with research misconduct, interactions with members of the laboratory and the mentor, and the ethical role of the scientist in society.

**Course Notes:** All current G6 students must register for this course on their Fall Semester study cards. Specific enrollment instructions will be sent to current G6s and other eligible students

prior to the first day of class. Please contact Bethany_Krevat@hms.harvard.edu, for enrollment inquiries. **Restricted to HILS graduate students within programs on the Longwood campus.**

**Course Head:** Kristin White, Kristin.White@mgh.harvard.edu
**Course Administrator:** Bethany_Krevat@hms.harvard.edu

## MED-SCI 312QC Graduate TF Training in the Biomedical Sciences

Bradley Coleman

2 units. Enrollment limited to 50. Instructor consent required.
**Initial Course Meetings**: 3:00pm - 5:00pm on TH, Aug 26; T, August 31; TH, Sept 2
**Meeting Location**: Contact instructor
Registration for Nanocourse: https://curriculumfellows.hms.harvard.edu/classes/graduate-tf-training-biomedical-sciences-0

MED-SCI 312QC is designed to be an 'on the ground' training for Longwood-based teaching fellows. The course instructs graduate student teaching fellows in the pedagogy and course management skills required to be an effective TF. The course begins with three two-hour class sessions that focus on the basics of evidence-based teaching practice and practical strategies for working with students. As the semester progresses, students use their work as TFs as the basis for continued instruction and reflection on teaching best practices and the challenges of their application in real-world settings.

**Course Notes**: Open to any HILS graduate student serving as a Teaching Fellow in the fall semester, pending approval of the Curriculum Fellow working in their course (or by special arrangement approved by the Director of the Curriculum Fellows Program).
**All** students interested in registering for MED-SCI 312QC should **also** register for the *Graduate TF Training in the Biomedical Sciences* nanocourse. Any interested student may attend the first three sessions of MED-SCI 312QC and receive nanocourse credit, regardless of whether they are a current TF.
Register for the nanocourse here.

**Course Director**: Bradley Coleman, bradley_coleman@hms.harvard.edu

## MED-SCI 316QC PhD Pathfinder

Joseph Arboleda, Jane Riccardi

2 Units. Enrollment limited to 50. Instructor consent required.
M - F, 5:00pm - 7:00pm (with an additional hour afterwards for networking)
**Meeting Dates**: Oct. 18- Oct. 22, 2021 *(these dates are tentative and are subject to change)*
**Meeting Location**: 10/18 – 10/21 Cannon Room, 10/22 TBD

In this course, *PhD Pathfinder*, students will learn about the many career paths available to people with advanced degrees in biomedical research including academia, biotech, patent law, science writing/publishing, consulting/business, education, and science policy/regulation. Students will also learn how to find opportunities on and off campus to take the next step in their career plans.

A PhD education provides students with fundamental knowledge about the principles and practice of the scientific method and promotes development of problem-solving skills in ways that are quite useful for many different professions. Students will have the opportunity to learn from experienced professionals representing each of these paths, to learn about strategies for career development, curriculum enrichment, and networking opportunities that will make them competitive for their career of choice.

The course is open to all PhD students interested in learning about the range of career options available to biomedical PhDs. The course includes talks, didactic sessions, workshops and networking events to promote interactions between students and invited speakers. There will be a special emphasis on helping students with their own skill self-assessment to assist in career and professional development. After each session there will be a small networking reception for both the students and lecturers.

**Course Note**: Students are required to attend all five sessions for course credit.

**Course Director**: Joseph Arboleda, joseph_arboleda@meei.harvard.edu
**Course Manager**: Jane Riccardi, jane_riccardi@hms.harvard.edu

## Neurobiology

# NEUROBIO 306QC Quantitative Methods for Biologists (August bootcamp)

Michael Springer, Richard T. Born

2 Units. Enrollment limited to 80. Instructor consent required.
M/W/F, 10:00am-4:00pm (one-hour break from 2pm-3pm) EST
T/Th, 2:00pm-4:00pm (drop-in/homework) EST
**Meeting Dates**: Aug. 9 – Aug. 20, 2021
**Meeting Locations**:
M/W/F in Cambridge, MA in Maxwell-Dworkin G115
T/TH in Longwood (Boston), MA in TMEC 227 or on zoom

The goal of this virtual camp is to introduce you to programming in the MATLAB environment and to show you the power this provides for analyzing data and for gaining intuition about the behavior of complex systems through the use of numerical simulations. Some of you, upon encountering in the previous sentence words like "programming" and "numerical simulations," will feel the cold hand of fear grip your stomach, because you have never done any programming and, in fact, have tried to avoid math as much as possible. If so, YOU ARE PRECISELY THE PERSON WE HAD IN MIND as we were planning the course. We are aiming to help you break through this barrier of darkness and fear into the radiant sunshine of quantitative enlightenment. The true beauty of MATLAB, as we will personally demonstrate, is that it allows people who are not mathematically adept (e.g. some of the instructors of this course) to use powerful numerical methods and visualization tools to gain an understanding of concepts that are very difficult to grasp analytically.

**Course Notes**: The camp is primarily designed for those of you with *no prior programming experience*. If you fit this description, you should definitely plan to take the course. It is critical to be familiar with a scientific programming language with which to improve your quantitative literacy throughout graduate school. We also suggest that you start working through the MOOC that Mike created as an adjunct to the boot camp. It covers much of the same material as we will cover in class during the first week, but, as you all know, repetition is essential when learning a new language.

Sign up here. Please put this course on your fall term study card if you wish to receive credit for it. Email jennie_epp@hms.harvard.edu, with enquiries.

**Course Instructors**: Michael Springer, Michael_Springer@hms.harvard.edu and Rick Born, richard_born@hms.harvard.edu

## NEUROBIO 308QC Thinking about Data: Probability & Statistics for the Life Sciences

Richard T. Born, Brian Healy

2 units. Enrollment limited to 40. Instructor consent required.
W, 5:00pm - 7:00pm
**Meeting Dates**: Sept. 1 – Oct. 20, 2021
**Meeting Location**: TMEC 447

Probability and statistics taught with an emphasis on using simulations and re-sampling methods to both analyze data and understand core statistical concepts. Prior to class, students will view online lectures from Dr. Brian Healy's biostatistics course. In class, we will focus on coding exercises to practice different approaches to analyzing real data sets, with an emphasis on resampling methods. Coding exercises may be carried out using either Python or MATLAB.

**Course Notes**: This course will use a flipped design in which students will view video lectures from Dr. Brian Healy's Biostatistics Certificate Course (offered through Catalyst) prior to in-class programming.

**Prerequisite**: Students are required to have some experience in programming in either Python or MATLAB. Neurobiology 306QC can fulfill this requirement.

**Course Head**: Richard Born, richard_born@hms.harvard.edu
**Other Instructor**: Brian Healy
**Curriculum Fellow**: Taralyn Tan, taralyn_tan@hms.harvard.edu

## NEUROBIO 309QC The Molecular Pathology & Current Therapies for Eye Diseases

Dong Feng Chen, Petr Baranov, Corinna Bauer, Kin-Sang Cho, Shelley Fried, Daniel Sun, Mengyu Wang

2 units. Enrollment limited to 20. Instructor consent required.
M, 3:00pm - 5:00pm
**Meeting Dates**: Sept. 6 – Dec. 6, 2021
**Meeting Location**: Schepens Eye Research Institute, 2nd-Floor Conference Rm, 20 Staniford St.

The eye, as a window to the brain, presents an excellent model system to the study, diagnosis and evaluation of treatment strategies for neurodegenerative disorders in the central nervous system. A surge of progress resulting from studies in the disease mechanisms and the

development of new imaging technology have led to a huge step forward in the therapies for diagnosing and treating retinal diseases and preventing blindness. This course will offer students an in-depth examination of current knowledge regarding ocular imaging, diagnosis, molecular pathology, and therapy, with an emphasis on recent breakthroughs and discussion of key literature in the field. The class consists of lectures and group discussions that focus on seminal papers selected from both the basic science and clinical ophthalmology, which will serve as a basis for teaching students basic concepts of ophthalmology and becoming familiar with advanced imaging tools and animal models of retinal diseases. Each session will review the landmark publications on a particular topic or disease. The class will foster discussion on the implications of studies in eye and other disease mechanisms and therapies.

**Course Notes**: Offered in alternate years
**Recommended Prep**: Basic understanding for the anatomy of the eye

**Course Head**: Dong Feng Chen, dongfeng_chen@meei.harvard.edu
**Other Instructors**: Petr Baranov, Corinna Bauer, Kin-Sang Cho, Shelley Fried, Daniel Sun, Mengyu Wang

## NEUROBIO 311QC Eye, Brain & Vision: Classics in Visual Neuroscience

Richard Born, Jan Drugowitsch, Talia Konkle, Mark Andermann, Michael Do, Margaret Livingstone, Joshua Sanes, Chinfei Chen

2 units.
W, 5:00pm - 7:00pm
**Meeting Dates**: Oct. 27 – Dec. 15, 2021
**Meeting Location:** Goldenson 229

This course is designed to meet two needs in the visual neuroscience community at Harvard. The first is a necessary didactic component to our training grant from the National Eye Institute ("Research Training in Visual Neuroscience"); the second is for our students to read primary literature that is of foundational importance for our current understanding of the visual system. The course will consist of weekly two-hour meetings during which students lead discussions, with guidance from training grant faculty, of papers that are "classics" in their respective fields paired with a modern counterpart; frequently this entails a direct comparison of original studies focused on nonhuman primates with more recent approaches in rodents.

**Course Head:** Richard Born, richard_born@hms.harvard.edu

## NEUROBIO 315QC Human Neuroanatomy & Neuropathology

Matthew Frosch, Jean Augustinack
2 units. Enrollment limited to 20. Instructor consent required.
M/W/F, 8:30am – 12:00pm
**Meeting Dates:** Sept. 27 – Oct. 29, 2021
**Meeting Location:** TMEC 209

This course will cover human neuroanatomy in depth, with an emphasis on the functional implications of structure and medical implications of lesions. Teaching occurs through lectures, small group sessions, brain dissection and homework assignments.

**Course Notes**: Restricted to Graduate Students only. This course is offered as part of HT130. Students may not co-register for both courses.

**Course Heads**: Matthew Frosch, mfrosch@mgh.harvard.edu, Jean Augustinack, jaugustinack@mgh.harvard.edu

## NEUROBIO 322QC Advances in synaptic, cellular and circuit neuroscience

Pascal Kaeser, Wade Regehr

2 units. Enrollment limited to 10. Instructor consent required.
T, 9:00am – 10:45am
**Meeting Dates:** Sept. 14 – Nov. 16, 2021
**Meeting Location:** Goldenson 318

In this literature analysis course, students will read, analyze, present and discuss primary research literature on synaptic, cellular and circuit neuroscience. The principal goals are to (a) enhance the students' understanding of the current state of knowledge of neuroscience, and (b) to provide experience in reviewing, critiquing and presenting primary research articles. The course is integrated with an existing journal club that was initiated in the Kaeser and Regehr laboratories and that attracts additional members of the broader neurobiology research community. In addition to the participation in the journal club, the course participants will obtain a brief conceptual introduction to each paper by a teaching assistant before the journal club, and they will participate in an extended Q&A and discussion session after each journal club, such that the discussed paper can be embedded with related current concepts on each topic.
**Course Notes:** The course consists of an introduction (9.00-9.15), a journal club with additional participants (9.15-10.15), and a Q&A session with a teaching assistant and/or instructor (10.15-10.45)

**Recommended Prep:** Students should have completed NB215 or a similar foundational neuroscience course.

**Course Heads:** Pascal Kaeser, kaeser@hms.harvard.edu, Wade Regehr, wade_regehr@hms.harvard.edu

## Speech & Hearing Bioscience Technology

### SHBT 301QC Introduction to Speech & Hearing Laboratories

Bertrand Delgutte

2 units.
**Meeting Dates:** Contact instructor
**Meeting Location:** Contact instructor

Short research presentations by faculty in the Speech and Hearing Bioscience and Technology to help students select a laboratory for research rotations. Some meetings include an on-site laboratory visit.

**Course Head:** Bertrand Delgutte, bertrand_delgutte@meei.harvard.edu