INTEGRATIVE BIOLOGY

and

ORGANISMIC & EVOLUTIONARY BIOLOGY

SENIOR THESES

2012-2025

Note: Integrative Biology concentrators can read theses online; contact James Poolner (poolner@fas.harvard.edu) to request an electronic copy. All hard copies from 2018–2023 are also available for viewing in the hallway of BioLabs 1082. Red text indicates a Hoopes Prize winner and/or an "Exceptional"-graded thesis.

INTEGRATIVE BIOLOGY SENIOR THESES
CLASS OF 2025

STUDENT	TITLE	DIRECTOR
Sawyer Cooper	*Stingray gliding behavior: the effect of tail length and pectoral fin conformation on stability*	**Dr. George Lauder**
Finn Crawford	*Carbon Allocation and the Role of Symbiotic Root Associations in Trees Under Elevated CO2*	**Dr. Benton Taylor**
Aleksandra Denisenko	*Characterization of Basal-Luminal Cells in Normal Human Mammary Epithelium and Cancer: Mechanisms of Regulation and Response to Therapy*	**Dr. Joan Brugge [HMS]**
Eden Fisher	*Aldered Landscapes: Effects of Arctic Shrub Expansion on Physical vs. Biogeochemical Drivers of Nutrient Availability*	**Dr. Benton Taylor**
Talon Flodman	*Even Greater Depression: Uncovering the Coevolution of Depression and Inflammation, The.*	**Dr. Barbara Natterson-Horowitz [HEBB]**
Katherinne Fox	*Decoding Adhesion: How Sialic Acid Drives Platelet-Tumor Cell Interaction and Enhances Metastatic Potential*	**Dr. Beth Battinelli [Brigham & Women's]**
Dariana Gonzalez Aguilar	*Biodiversity "Hop-Spots": Bais drive patterns of anuran biodiversity in Congolese rainforest ecosystems*	**Dr. Andrew Davies**
Chloe Hansen	*Decoding the Impact of Age on Cancer Immunotherapy: Hematopoiesis, Bone Marrow Dendritic Cell Differentiation, and T Cell Priming in Young and Old Immune Systems*	**Dr. Dave Mooney [SEAS]**
Eliza Hirsch	*Embryonic regeneration and stem cell identity in Hofstenia miamia development*	**Dr. Mansi Srivastava**
Lucy Hurlbut	*Zombies Can't Take The Heat: The Thermal Preferences of Drosophila melanogaster Manipulated by Entomophthora muscae*	**Dr. Carolyn Elya [MCB]**
Isabel Kim	*Defining Early Epigenetic and Cellular Events in Pancreatic Cancer Precursor Formation*	**Dr. Sahar Nissim [Brigham & Women's]**
Morgan Kim	*Of Mice and Men: Establishing the First Mouse Model of the Ultra-Rare ADSS1-Myopathy and Providing Insight into its Metabolic Pathomechanisms [Graded EXCEPTIONAL]*	**Dr. Alan Beggs [Children's Hospital]**
Ever Marinelli	*Optimizing CHARM: Engineering an Epigenetic Editor for Enhanced Specificity and Decreased Immunogenicity [Graded EXCEPTIONAL]*	**Dr. Jonathan Weissman [Broad Inst.]**
Amarachi Nwogu	*Fas Ligand Mediation of Glial Homeostasis and Glaucoma Progression*	**Dr. Meredith Gregory-Ksander [Mass. Eye & Ear]**
Julia O'Donnell	*Beyond their borders: bai edges increase structural heterogeneity and diversity in Congolese forests [Graded EXCEPTIONAL; HOOPES Winner]*	**Dr. Andrew Davies**
Aoi Otani	*Mitigating Catastrophic Forgetting and Mode Collapse in Text-to-Image Diffusion via Latent Replay*	**Dr. Gabriel Kreiman [Children's Hospital]**
Ray Sakamoto	*Noisy Nectarifery: Searching for the Genetic Bases of Differential Nectary Development in Mimulus*	**Dr. Elena Kramer**
Summer Smentek	*Keeping the "Live" in Livestock and Livelihoods: Landscape Drivers of Large Carnivore Attacks on Livestock in Laikipia, Kenya*	**Dr. Andrew Davies**
Nehir Toklu	*Megafauna as Mega-Gardeners: The Impact of Elephant-Mediated Disturbance on Herbaceous Plant Biodiversity in the Bais of the Congo Basin*	**Dr. Andrew Davies**

INTEGRATIVE BIOLOGY SENIOR THESES
CLASS OF 2024

STUDENT	TITLE	DIRECTOR
Arturo Aguilar	*Floral phenotypic response of ipomopsis aggregata and related hybrids to changing soil moisture and nitrogen enrichment*	**Dr. Diane Campbell [UC Irvine]**
Aiden Aguirre	*Soil Bacteria Diversity Across Agricultural Management Intensities and Implications for Soil Health*	**Dr. Chuck Davis**
Ella Bradford	*Hyenas in the Mist: Open-ecosystem availability and prey abundance enable persistence of spotted hyena (Crocuta crocuta) in a rainforest dominated landscape*	**Dr. Andrew Davies**
Eve Crompton	*Identifying and Characterizing Clonal Responses of AML Cells to Metabolic Stress and Chemotherapy*	**Dr. David Scadden [Mass. General]**
Amanda Dynak	*Brain Representation of Pain Evoked by Punctate Mechanical Stimuli and Mechanical Hyperalgesia in Healthy Subjects*	**Dr. Eric Moulton [Children's Hospital]**
Michael Fairley	*Chicka Chicka Shroom Shroom, Will There Be Enough Room: Variations in Mycorrhizal Colonization Patterns Across Natural Environmental Gradients*	**Dr. Ben Taylor**
Isa Gooijer	*Root Exudation Rate in Response to Long-term Soil Warming and Inorganic Nitrogen Addition in Temperate Forests*	**Dr. Ben Taylor**
Josh Grover	*Rejuvenating T-cells for Immunotherapy*	**Dr. George Church [HMS]**
Meadow Hall	*Phylogenetic reconstruction of nimble reef crabs (Grapsoidaea: Percnidae) and species delimitation using ultra-conserved elements*	**Dr. Gonzalo Giribet**
Julian Handler	*Using LiDAR Remote Sensing and Ground Truthing to Investigate the Impacts of Historical Logging on Forest Structure for Cape Parrot Conservation*	**Dr. Andrew Davies**
Olympia Hatzilambrou	*"All is in Flux and Nothing Stays Still": Anti-phage defense and genome plasticity in microbial symbionts of deep-sea invertebrates*	**Dr. Pete Girguis**
Julie Heng	*Chromosome Loss as a Mechanism for Rapid Adaptation in Model and Pathogenic Yeasts [Graded EXCEPTIONAL; HOOPES Winner]*	**Dr. Andrew Murray**
Fechi Inyama	*Discovery and Characterization of Chitin-Degrading Enzymes in the Gut Microbiome of Gadus morhua*	**Dr. Emily Balskus [Chemistry]**
Haesung Jee	*Myco-managing Summit Disease: Unraveling the Genetic Mechanisms of Behavior Manipulation in the Entomophthora muscae 'Zombie Fly' Model*	**Dr. Carolyn Elya**
Ty Kannegieter	*Rationally Designed Immunogens for the Elicitation of Rare Antibody Subtypes in H1 Influenza*	**Dr. Aaron Schmidt [Mass. General]**
Isabel Levin	*Brains for Barking: Analyzing The Canine Vocal Communication Network Through a Comparative Neuroscience Lens*	**Dr. Erin Hecht [HEBB]**
Carlie McGrath Tydings	*Investigating the Role of Nucleoporins and Sub-Nuclear Localization in Regulating Imprinted Gene Expression*	**Dr. Amanda Whipple [MCB]**
Sakiko Miyazaki	*Investigating the Morphology and Evolution of the Bat (Chiroptera) Backbone*	**Dr. Stephanie Pierce**
Niki Nair	*Your Brain on Space: Examining the effects of microgravity on the cerebellum*	**Dr. Seward Rutkove [Beth Israel Deaconess]**
Daniel Pinckney	*Small Body, Big Deal: A UCE-based biogeographic investigation of the New Caledonian mite harvester genus Troglosiro (Arachnida: Opiliones: Troglosironidae)*	**Dr. Gonzalo Giribet**
Emily Sanchez	*Identification and management of vitamin D deficiency and omega 3 fatty acid supplementation in patients with systemic lupus erythematosus (SLE)*	**Dr. Karen Costenbader**
Lane Theander	*Whiffs of Selection: Assessing Odorant Receptor Variation in Deer Mouse Populations Facing Distinct Predation Pressures*	**Dr. Hopi Hoekstra**
Libby Tseng	*Reproduction in the three-banded panther worm Hofstenia miamia [Graded EXCEPTIONAL; HOOPES Winner]*	**Dr. Mansi Srivastava**
Abby White	*Examining the Phenotypic and Genotypic Link in Heterotaxy and Other Rare Diseases*	**Dr. Sarah Morton [Children's Hospital]**
Beatrice Youd	*Structural variation in Congolese Marantaceae forest drives differences in biodiversity and above-ground carbon stocks [Graded EXCEPTIONAL]*	**Dr. Andrew Davies**

IB SENIOR THESES, CLASS OF 2023

STUDENT	TITLE	DIRECTOR
Talia Blatt	*Burning Questions: Assessing the Effect of Fire on Sierra Nevada Forest Ecosystems with Field and Remote Sensing Data*	Dr. Paul Moorcroft
Alana Carroll	*Contrafreeloading and the Play Hypothesis in African Grey Parrots (Psittacus Erithacus) and Umbrella Cockatoos (Cacatua alba)*	Dr. Irene Pepperberg
Nick Daley	*And the Crowd Goes Wild: Impacts of Siberian Alder Crowding on Surrounding Vegetation in the Alaskan Tundra*	Dr. Ben Taylor
Naomi Hegwood	*Tall Trees and Where to Find Them: An Exploration of the Effects of Soil Characteristics, Climate, Topography, and Neighbors on Maximum Canopy Height* HOOPES PRIZE WINNER	Dr. Paul Moorcroft
Peyton Jones	*Ecological and Genetic Edge Effects in Phlox drummondii*	Dr. Robin Hopkins
Megumi Kirby	*Friends with Benefits: Female-Driven Food Sharing in Unrelated Bonobos*	Dr. Martin Surbeck
Hana Kiros	*Investigating the impact of genetic diversity and editor type on the detection of off-target effects induced by CRISPR-based gene editors*	Dr. Keith Joung
Anisha Laumas	*Express Yourself: A Comparison of Lineage-Specific Gene Expression Between Healthy and Cancer Tissues*	Dr. Fei Chen
Magdalen Mercado	*Humerus Shape and Function Through the Long Evolutionary History of Mammals and Their Ancestors*	Dr. Stephanie Pierce
Anaí Morales	*Venturing beyond the Wood Wide Web: Investigating the role of orchid mycorrhizal fungi as root endophytes in non-orchid plants*	Dr. Ben Taylor
Nadine Oury	*No Sleep, More Stink: The Impact of Sleep Deprivation on Olfaction Driven Behavior in Zebrafish Larvae*	Dr. Florian Engert
Lindsay Poulos	*Dissecting the Role of Ctcfl and Ctcflos as Mediators of the Fasting Response in the Liver*	Dr. Mary Elizabeth Patti
Logan Qualls	*A Passion for Graphic Design: Using Parametric Modeling to Analyze Frontal Appendage Morphology in Radiodonta*	Dr. Javier Ortega-Hernandez
Maya Rayle	*The Role of Evolution, Size, and Ecology in Salamander Dentition Patterns*	Dr. Jim Hanken
Dylan Roy	*Zany Zombie Zeitgebers: A Circadian Timecourse of Behavior-Altering Fungus Entomophthora muscae*	Dr. Ben de Bivort
Oksanna Samey	*Solving the Promethean Paradox: Elucidating the dynamics of liver regeneration by designing a novel in vivo repeated injury model*	Dr. Fernando Camargo
Ashley Schreiber	*Moving beyond the respirometer: correlating body movements to metabolism in fish*	Dr. George Lauder
Jonathan Sedano	*Morphometric Analyses of the Developing Autopods in Human and Mouse Embryos*	Dr. Terry Capellini
Katie Sierra	*The Fox and the Hound: A Comparative Analysis of Canid-Human Attachment Behaviors in Dogs and Russian Domesticated Foxes*	Dr. Erin Hecht
Jocelyn Wang	*The role of soil micronutrients in the symbiosis between the African ant plant, Vachellia drepanolobium and its resident ant species* HOOPES PRIZE WINNER	Dr. Naomi Pierce
Maddi Waskom	*Stuck in the mud: experimental taphonomy and computed tomography demonstrate the critical role of sediment in carcass stabilization during early fossilization*	Dr. Javier Ortega-Hernandez
Ashley Watts	*CRISPR/Cas9-mediated mutation of the rosy gene in the large milkweed bug Oncopeltus fasciatus*	Dr. Cassandra Extavour
Athena Ye	*The Ecological Benefits and Neural Underpinnings of Drift in Drosophila melanogaster*	Dr. Ben de Bivort

IB SENIOR THESES, CLASS OF 2022

STUDENT	TITLE	DIRECTOR
Sorcha Ashe	*Flying Colors: The Evolution of Wing Color and Color Vision in the Hyperdiverse Eumaeini Butterfly Tribe (Family: Lycaenidae)* HOOPES PRIZE WINNER; EXCEPTIONAL GRADE	Dr. Naomi Pierce, OEB
Kemi Ashing-Giwa	*An analysis of sedimentary archaea to characterize chemoorganoautotrophic metabolism at cold methane seeps*	Dr. Pete Girguis, OEB
Angela Balistrieri	*The Effect of M2r Macrophages on the Lung Microenvironment in Hypoxia-induced Pulmonary Hypertension*	Dr. Stella Kourembanas , Children's Hospital
James Caven	*Many Plants, One Pattern: Environmental Effects on Plasticity in Phlox* HOOPES PRIZE WINNER; EXCEPTIONAL GRADE	Dr. Robin Hopkins, OEB
Lauren Church	*Sharing vs. Sparing in the Rhizosphere: Ecosystem Impacts and Nutrient Dynamics of Xanthobacter autotrophicus Biofertilizer*	Dr. Ben Taylor, OEB
Katie DeGroot	*The Ecological Regulation of Symbiotic Nitrogen Fixation in Black Locust (Robinia pseudoacacia)*	Dr. Ben Taylor, OEB
Zoe Flores	*Assessing the Dynamics of Urban Influence on Moth Diversity and Evolution*	Dr. Naomi Pierce, OEB
Graham Friedman	*A Phylogenetic Assessment of the Millipede Order Polydesmida*	Dr. Gonzalo Giribet, OEB
Nat Fuentes	*Evaluating the sequence structure and enhancer activity of de novo regulatory sequences*	Dr. Pardis Sabeti, OEB
Juhee Goyal	*Development and Validation of Migration Assay for Cellular Backpacks Adhered to Human and Murine Monocytes for Targeted Drug-Delivery [Joint thesis; EngSci primary]*	Dr. Samir Mitragotri, SEAS
Cali Grincavitch	*Little Cayman Staghorn Coral Dome Restoration Project*	Dr. Aaron Hartmann, OEB
Elly Katz	*Gene Edit Me, Please* EXCEPTIONAL GRADE	Dr. Elena Kramer, OEB
Jack Lawlor	*Lumen Morphogenesis of the Chicken Esophagus*	Dr. Cliff Tabin, HMS
Nicole Mejia	*Plastic Ingestion in Wedge-Tailed Shearwaters: An analysis of Blood Chemistry, Gene Expression and Body Condition*	Dr. Scott Edwards, OEB
Eris Mihelic	*Dig a Little Deeper: An Examination of the Genetic Basis of Behavioral Evolution in Peromyscus Burrowing*	Dr. Hopi Hoekstra, OEB
Aya Mukai	*From Fire to Habitat Heterogeneity: Using LiDAR Remote Sensing to Uncover the Impact of Pyrodiversity on Vegetation Structural Heterogeneity across Environmental Gradients* EXCEPTIONAL GRADE	Dr. Andrew Davies, OEB
Maranda Ngue	*Keeping Rank: Exploring the Relationship between Grooming and Dominance in Bonobos (Pan paniscus)*	Dr. Martin Surbeck, HEB
Frances Papandile	*Investigating How Human-Specific Variants in Human Accelerated Regions Shape Transcriptional and Spatial Expression of IL1RAPL1 During Neurodevelopment*	Dr. Chris Walsh, CHILDREN'S
Johanna Staples-Ager	*Increased Virus-Like Particle Specificity Using Tissue-Specific gRNA Promoters*	Dr. Jennifer Doudna, UCBerkeley
Sophie Webster	*Plants Plants Evolution: Investigating Genetic and Environmental Drivers of Red Oak Phenology*	Dr. Robin Hopkins, OEB

IB SENIOR THESES, CLASS OF 2021

STUDENT	TITLE	DIRECTOR
Mushtaaq Ali	*Impacts of Fire on Animal Path Abundance in South African Savannas*	Dr. Andrew Davies, OEB
Kim Boerrigter	*These fins are made for walkin': A comparative musculoskeletal analysis of anglerfish pectoral fins*	Dr. Stephanie Pierce, OEB
Ella Frigyik	*Phylogeographic investigation into the New Zealand harvestman genus Algidia (Arachnida: Opiliones: Triaenonychidae)* [HOOPES PRIZE; GRADED EXCEPTIONAL]	Dr. Gonzalo Giribet, OEB
Marissa Garcia	*Improved Population-Level Monitoring of Critically Endangered North Atlantic Right Whales (Eubalaena glacialis) Using Passive Acoustic Monitoring* [GRADED EXCEPTIONAL]	Dr. Holger Klinck, Cornell University
Laura Jenny	*Beetle Bites and Bacteria: Interactions between plants in the family Cucurbitaceae, their leaf beetle vectors, and Erwinia tracheiphila, a bacterial wilt pathogen*	Dr. Naomi Pierce, OEB
Jenny Liu	*Orbicella faveolata, A Living Paradox: Characterization of the Coral Microbiome Reveals Core Microbiota Across Life Stages*	Dr. Mónica Medina, Univ. of Pennsylvania
Jude Okonkwo	*Identification and Evaluation of Synergistic Combination Chemotherapies for Glioblastoma*	Dr. Samir Mitragotri, SEAS
Ari Romero	*Investigating the locomotor mode of P. delaharpeae with implications for the ecological diversity of non-mammalian cynodonts*	Dr. Stephanie Pierce, OEB
Joey Toker	*Guts, Germs, and Missing Lncs: The Gut Microbiome and Long Non-coding RNAs in Cancer Immune Evasion*	Dr. Marco Mineo, Brigham & Women's Hospital
Erin Wright	*Squeezed Until They Burst: Does calcium affect the mechanical properties of leaf cell walls?*	Dr. Missy Holbrook, OEB
Alex Zaloga	*Axon Guidance Cues in the Visual System of the Cephalopod Doryteuthis pealeii*	Dr. Kristen Koenig, FAS
Luann Zerefa	*Osteohistology of Salamanders with Varying Levels of Terrestriality and Applications for Interpreting Fossil Habitats*	Dr. Stephanie Pierce, OEB

IB SENIOR THESES, CLASS OF 2020

STUDENT	TITLE	DIRECTOR
Rewan Abdelwahab	*Modeling Resistance to Tyrphostin NT157 in ER-Positive Breast Cancer Cells*	Dr. Douglas Yee, University of Minnesota
Sarah Alam	*Investigating the relationship between implicit and explicit knowledge in Artificial Grammar Learning: An ERP Study*	Dr. Yael Arbel, MGH Inst. Of Health Professions
Elizabeth D'Haiti	*Investigation of the timeline and role of neoblast formation in Hofstenia miamia embryogenesis*	Dr. Mansi Srivastava, OEB
Mary Katherine DeWane	*Ecology and Morphology of Staminodes, A Novel Floral Organ in Aquilegia*	Dr. Elena Kramer, OEB
Jessica Diaz	*Milk and Microbes: Effects of secretor status on infant energy gain through the gut microbiome*	Dr. Rachel Carmody, HEB
Brandon Duffy	*Characterization of a Murine Model of Oxazolone-Induced Orbital Inflammation*	Dr. Leo Kim, Mass. Eye & Ear
Stephanie Dufresne	*Testing Grey Parrot (Psittacus erithacus) Language Development Through Sequences and the Preposition "In"*	Dr. Irene Pepperberg, Psychology
Kevin Eappen	*The Therapeutic Potential of Diet-Derived Polyphenols for Attenuating Metabolic Disorders Through the Gut Microbiota*	Dr. Rachel Carmody, HEB
Skye Fenton	*Movement and Resource Use Analysis of European Golden Jackals (Canis aureus) and European Roe Deer (Capreolus capreolus)*	Dr. Paul Moorcroft, OEB
Justina Hewitt	*Evolution of Social Ground-Dwelling Sciuridae (Marmotini): Climatic and Life History Drivers*	Dr. David Haig, OEB
Annina Kennedy-Yoon	*Ants in your plants: the effect of ant species on the morphology and fungal communities of Vachellia drepanolobium*	Dr. Naomi Pierce, OEB
Allison Law	*Consider the lobster ectocommensal, Symbion americanus: phylogeographic analysis reveals spatial niche partitioning on host mouthparts* **[HOOPES PRIZE]**	Dr. Gonzalo Giribet, OEB
Mattia Mah'moud	*Examining Risk Factors for Low Plasma Magnesium in Women*	Dr. Kathryn Rexrode, Brigham & Women's Hospital
Elena Moncada	*Molecular Phylogeny of the Genus Donax (Bivalvia): A Species-Level Investigation into the Relationships of Globally Distributed Surf Clams*	Dr. Gonzalo Giribet, OEB
Dylan Ryals	*Of Mites and Men: Using spatially-explicit sampling and genetic sequencing to uncover disease dynamics of honeybee parasite Varroa destructor in migratory apiculture* **[HOOPES PRIZE]**	Dr. Brian Farrell, OEB
Chinmay Sonawane	*A defence of the queens of Africa: the public health and economic benefits of spotted hyenas (Crocuta crocuta)* **[GRADED EXCEPTIONAL; HOOPES PRIZE & CAPT. JONATHAN FAY PRIZE]**	Dr. Neil Carter, University of Michigan
Dexter Summers	*Deep-Sea Crushers: The Evolution of Specialized Pharyngeal Jaws in the family Myctophidae* **[GRADED EXCEPTIONAL]**	Dr. George Lauder, OEB
Rory Wakeford	*I Hate to See You Go, but I Love to Watch You Leave: The Social Mechanisms Underlying Group Movement and Leadership in Forest-Dwelling Olive Baboons (Papio anubis)*	Dr. Isaac Schamberg, HEB
William Wang	*Identification of Autism-Associated Motor Stereotypes in a Rat Model of Fragile X Syndrome via a Novel Motion Capture Technique* **[GRADED EXCEPTIONAL]**	Dr. Bence Ölveczky, OEB
Adele Woodmansee	*"It Is Pure Criollo Maize": Subsistence Agriculture and Ideas of Locality and Contamination In San Miguel del Valle, Oaxaca* **[HOOPES PRIZE, CAPT. JONATHAN FAY PRIZE, and TALIESIN PRIZE]**	Dr. Chuck Davis, OEB

IB SENIOR THESES, CLASS OF 2019

STUDENT	TITLE	DIRECTOR
Nina Armstrong	*Investigation of the Arginine Biosynthesis Pathway as a Novel Drug Target in Mtb's Relative M.abcessus*	Brian Weinrick (Trudeau Institute)
Kevin Bao	*Population Genetics of Malaria Parasite Protein Pfs47, the: The Buzz Surrounding its Diversity and What Can Be Inferred about its Evolutionary History*	Dan Hartl
Zeke Benshirim	*Stalks of Mature Fern Sporangia Collapse Selectively to Regulate Dehydration and Spore Dispersal*	Missy Holbrook
Andrea Brown	*Mate choice in hybrid wildflower species: pollen-pistil incompatibility as an isolating mechanism*	Robin Hopkins
Johnathan Clark	*Population Genetics Study of Cryptic Speciation and Adaptation in the North American Catharus Thrushes, a*	Scott Edwards
Isabella Colocci	*Trial by Fire: Investigating the Structure and Activity of Microbial Communities in a Dynamic Fumarole Environment*	Pete Girguis
Francesca Cornero	*Piagetian Liquid Overconservation in African Grey Parrots (Psittacus erithacus)*	Irene Pepperberg (Psychology)
Emmanuel D'Agostino	*Estimating Premating Isolation Among Allopatric Anolis sagrei Populations*	James Hanken
Brendan Dean	*Burning questions: Responses to fire by partners in a complex ant-plant symbiosis* [HOOPES WINNER]	Naomi Pierce
Camille DeSisto	*Consequences and Spread of the Invasive Strawberry Guava (Psidium cattleianum) in Madagascar's Rainforests* [HOOPES WINNER]	Chuck Davis
Matt Diaz	*Differentiation therapy in osteosarcoma: developing the foundations for a novel approach to a highly fatal disease*	David Scadden (MGH)
Jackie Ho	*Influence of Drought Legacy Effects on Mediterranean Ecosystem Structure and Composition*	Paul Moorcroft
Charlie Lee	*Trust Your Gut: Glycosphingolipids from the Gut Commensal Bacteroides Fragilis and Their Unique Immunomodulatory Function to Colonic Invariant Natural Killer T Cells* [HOOPES WINNER]	Dennis Kasper (HMS)
Kathryn Nunes	*Characterizing essential Shigella flexneri proteins utilized in gastrointestinal infection*	Christina Faherty (MGH)
Maria Park	*Leaf-Level Carbon Dynamics of Trees with Different Phloem Loading Strategies in Elevated CO2 Conditions*	Missy Holbrook
Meagan Popp	*Denticle surface of thresher shark tails, the: three-dimensional structure and comparison to other pelagic sharks*	George Lauder
Max Prager	*Display and Compromise: A Study of Ornamentation in Lizard Evolution*	David Haig
Allison Rabe	*Effects of a Natural Disturbance on Island Ecosystems at Multiple Scales, the: Shifts in Lizard Morphology and Microhabitat Use and Arthropod Abundance and Diversity after Hurricane Irma*	David Haig
Liz Roux	*Floridian Flatworms And Horseshoe Crabs: Phylogeographic Differentiation in Bdelloura candida, the Ectocommensal Marine Triclad of the Atlantic Horseshoe Crab Limulus polyphemus*	Gonzalo Giribet
Tom Saide	*Selection of Reference Genes for Real-Time Quantitative PCR Studies in Aquilegia x coerulea "Origami"*	Elena Kramer
Brady Stevens	*Adaptations for Height and Light in Three Species of Polytricaceae*	Missy Holbrook
Sophie Westbrook	*Exploratory Behavior and Phenotypic Convergence in Four Subspecies of Deer Mice*	Hopi Hoekstra

IB SENIOR THESES, CLASS OF 2018

STUDENT	TITLE	DIRECTOR
Juliet Bramante	*Development and Characterization of an Acid-Sensitive Microbial Kill Switch*	Pam Silver, HMS
Hayoung Chang	*Developmental Effects on Reward Sensitivity in Rhesus Macaques*	Alex Rosati, U. Michigan
Andre Dempsey	*Effect of Load Placement on Metabolic Rate during Loaded Walking in Humans*	Dan Lieberman, HEB
Michael Dybala	*Exploration of epigenetic modulation in type 1 diabetic human immune cells following exposure to Mycobacteria bovis [HOOPES WINNER]*	Denise Faustman, MGH
Annika Gompers	*Identification of transcriptional regulators of whole-body regeneration [HOOPES WINNER and GRADED EXCEPTIONAL]*	Mansi Srivastava
Sarah Gonzalez	*Breaking Up the Cat Back: Regionalization of Vertebral Form and Function in Felis catus*	Stephanie Pierce
Rebecca Greenberg	*Effects of sex and reproductive status on social burrow construction in Peromyscus polionotus*	Hopi Hoekstra
Annelie Herrmann	*Scaling by performance: performance trait divergence as intraspecific differentiation of Anolis sagrei between two habitats*	Jonathan Losos
Valerie Kahkejian	*Developing Novel Ganglioside-Based Therapeutics to Treat Inflammatory Bowel Disease*	Dan Chinnapen, Children's Hospital
Gaia Linfield	*Neural Mechanisms Underlying Age-specific Changes in Multisensory Integration in Caenorhabditis elegans*	Yun Zhang
Hanon McShea	*The Evolutionary History of Nitrogenase: Using Ancestral Protein Reconstruction to Investigate Adaptation to Precambrian Selective Pressures [GRADED EXCEPTIONAL]*	Betul Kacar, University of Arizona
Nina Morales	*Experimentally-induced predation pressure alters the foraging ecology of brown anoles (Anolis sagrei) on Bahamian islands*	Jonathan Losos
Shunn Theingi	*Pigmentation variation in Peromyscus maniculatus across an environmental gradient*	Hopi Hoekstra

OEB & IB SENIOR THESES, CLASS OF 2017

STUDENT	*TITLE*	DIRECTOR
Madeleine Ankhelyi	*Diversity of dermal denticle structure in sharks: surface roughness and 3D morphology*	George Lauder
Lorena Benitez	*Vertebral Anatomy and Locomotor Evolution in Synapsids: A Geometric Morphometric Approach*	Stephanie Pierce
Liz Benson	*Community succession and convergence in Australian pitcher plant microcosms (Hoopes Winner)*	Naomi Pierce
Emma Borjigin-Wang	*Nonstructural carbohydrate dynamics and wood anatomy in Quercus rubra*	Andrew Richardson
Julius Bright Ross	*Artificial Supplemental Feeding in Alpine Environments: Effects on Roe Deer (Capreolus capreolus) Habitat Selection*	Paul Moorcroft
Chelsea Cherenfant	*It's Fun to Understand Y-n-c-E: Elucidating the Role of the Uncharacterized Protein YncE in Salmonella Enterica Serovar Typhi Carriage*	Richelle Charles (HMS/MGH)
Michelle Choi	*The Control Lab Rat: Characterizing Rodent Behavior in Standard Laboratory Conditions*	Bence Ölveczky
Eamon Corbett	*Phylogeography of the Rufous-fronted Thornbird (Phacellodomus rufifrons), with Implications for South American Dry Forest Biogeography*	Scott Edwards
Emily Donaldson	*The Role of BIG PETAL in Developing Nectar Spurs in Aquilegia*	Elena Kramer
Katie Gibson	*Digital Modeling of the Vertebral Column of the Cynodont Thrinaxodon*	Stephanie Pierce
Alice Linder	*De-ranged: How competitiveness and functional traits predict range shifts of deciduous trees in eastern North America*	Lizzie Wolkovich
Ashton MacFarlane	*Cold Treatment Regulates Expression of Phenology-Relevant Candidate Genes in the English Walnut, Juglans regia (Hoopes Winner)*	Ned Friedman
Annie Opel	*The Effect of Coral Restoration on Reef Fish Communities (Graded Exceptional)*	Colleen Cavanaugh
Abba Parker	*Investigation of Habitat Partitioning in Fossil Horses of North America (Graded Exceptional)*	Stephanie Pierce
Christian Perez	*Niche partitioning and locomotor patterns in three species of mainland Anolis lizards in a tropical Costa Rican rainforest*	Jonathan Losos
Jess Rhodes	*The Genetic Basis of Sleep Duration and Irregularity*	Charles Czeisler (BWH)
Kristin Tsuo	*Large-scale genome wide association of human body proportion (sitting height ratio)*	Joel Hirschhorn (Broad Inst.)

OEB & IB SENIOR THESES, CLASS OF 2016

STUDENT	*TITLE*	DIRECTOR
Gabriel Amador	*Exploring differential regulation of a neofunctionalized paralog of APETALA3 that controls novel organ identity in Aquilegia*	Elena Kramer
Caitlin Andrews	*Sex Differences in Habitat Use and Ranging of Spider Monkeys (Ateles geoffroyi yucatanensis) in the Calakmul Biosphere Reserve, Mexico, and Implications for Conservation*	Kathy Slater
Prerna Bhat	*Of Mice and Mystacial Whiskers: Adaptive Evolution of Vibrissae Morphology in Peromyscus and Apodemus Mice*	Hopi Hoekstra
Imani Bunn	*Developing in Style: The Role of STYLISH1 in Aquilegia Carpel and Petal Spur Development*	Elena Kramer
Andrew Clark	*How do yellow jackets (Vespula germanica) fly while carrying loads?*	Stacey Combes
Laura Clerx	*How Do Trees Maintain Photosynthate Transport from Leaves to Roots as they Grow Taller? A study of the ontogenetic scaling of phloem sieve tube hydraulic resistance with tree height in Quercus rubra* [Hoopes Prize & Exceptional-graded]	Missy Holbrook
Chesley Ekelem	*Effects of wood pollution on pore water sulfide levels and eelgrass germination*	Peter R. Girguis
Kate Freedberg	*Development and ecological function of the novel floral organ staminodia in Aquilegia*	Elena Kramer
Sally Gee	*Adding timing to the framework of functional traits: A study of phenology across temperate deciduous angiosperm trees*	Lizzie Wolkovich
Simone Hasselmo	*Social Connections: Relationships between white matter integrity of the uncinate fasciculus and social awareness and cognition in typically developing children* [Hoopes Prize]	Charles A. Nelson
Ariana Kam	*A Comparative Study of the Effects of Pregnancy on Burrowing and Nesting Behaviors in Sister Species of Peromyscus*	Hopi Hoekstra
Liz Karan	*The scales of cnidarian associated fishes and their functional implications*	George V. Lauder
Paige Kouba	*Aedes Dance Party: Interbreeding and Hybridization Between Aedes triseriatus and Aedes hendersoni in Eastern Massachusetts*	Brian D. Farrell
Sam Lin	*Identifying Potential Regulatory Elements of Human and Canine Osteosarcoma Using the Type II CRISPR/Cas-9 Genome Editing System*	Jessica Alfoldi
Samantha Martin	*The role of the type 1 pilus in Streptococcus pneumoniae biofilm formation*	Rick Malley
Veeral Mehta	*Insights into dsRNA Export: Mapping a Potential Export Mutant, Social RNA, and Characterizing SID-5 Membrane Localization*	Craig P. Hunter
Rachel Moon	*Examining the Ecological, Morphological, and Behavioral Correlates of Dorsal Pattern Variations in Female Brown Anole Lizards (Anolis sagrei)*	Jonathan Losos
Gaby Ruiz-Colon	*Characterization and Contextualization of Flux Through the Polyol Pathway as a Biomarker for the Presence of Risk Factors of Vascular Complications of Type 1 Diabetes in Children and Adolescents*	Lori Laffel
Ellen Shrock	*Genome Engineering for Porcine-to-Human Xenotransplantation*	George Church
Layla Siraj	*Mutation, Selection, and the Cost of Artificial Genes*	Jeffrey Way
Emilie Thompson	*Mapping Adaptive Immune Development in Zebrafish*	Len Zon
Nia Walker	*Characterizing Differential Gene Expression in Probing Larvae of the Caribbean Coral Species Porites astreoides Lamarck, 1816* [Hoopes Prize]	Gonzalo Giribet
Tristan Wang	*Herpomyces: The Phylogeny, Taxonomy, and Ecology of a Fungal Genus Parasitic on Cockroaches*	Donald H. Pfister
Alex Weickhardt	*Dorsal fin structure and stiffness in the freshwater perches (Acanthomorpha: Percomorpha: Percidae)*	George V. Lauder

OEB & IB SENIOR THESES, CLASS OF 2015

STUDENT	*TITLE*	DIRECTOR
Hannah Borowsky	*A Biological Perspective on Why Teenagers Do Stupid Stuff* [Hoopes Winner]	Margaret Sheridan
Stephanie Caty	*Dressed to Kill: Toxicity in the Little Devil Poison Frog* [Hoopes Winner]	Lauren O'Connell
Aubrey Faust	*Development of a single nucleotide polymorphism barcode for Plasmodium vivax*	Pardis Sabeti
Alex Heyde	*Geometric morphometrics of adaptive cranial diversity in phyllostomid bats* [Hoopes Winner] [Graded "Exceptional"]	Arkhat Abzhanov
Alexander Jaffe	*Geographic variation in morphology and its environmental correlates in a widespread American lizard, Anolis carolinensis*	Jonathan Losos
Sang Il Kim	*Phylogeny, Systematics, and Evolution of the Family Lucanidae Latreille (Insecta: Coleoptera)* [Graded "Exceptional"]	Brian D. Farrell
Young Kwon	*The genetic basis of parental care in Peromyscus* [Hoopes Winner]	Hopi Hoekstra
Nicholas Lee	*Cell-specific transcriptional networks underlying epigenetic induction of adult cortical plasticity*	Takao Hensch
Bonnie Lei	*Tracking disease emergence: Contrasting patterns in mammal-bacteria coevolution*	Kevin Olival
Tess Linden	*The role of Agouti isoforms in the evolution of convergent pigmentation phenotypes in Peromyscus mice* [Hoopes Winner] [Graded "Exceptional"]	Hopi Hoekstra
Mikhaila Marecki	*Overcoming a Mechanical Disadvantage: Design and Evaluation of Feeding Performance in a Biorobotic Viperfish (Chauliodus sloani)*	George V. Lauder
Jenna McGugan	*A Deadly Diet: Dietary contributions to chemical defenses in the Little Devil frog, Oophaga sylvatica*	Lauren O'Connell
Emily Mistick	*Effects of wing flexibility on bumblebee flight stability*	Stacey Combes
Li Murphy	*A Bee's Chemical Cues of Sociality: Insights into Origins of Social Insect Behavior from Lasioglossum albipes*	Naomi E. Pierce
John Pulice	*It Takes Two: A Population Genomics Approach to Detecting Pairing Preference in Autotetraploid Arabidopsis Arenosa*	Kirsten Bomblies
Radhika Rastogi	*Structure Function Analysis of Ubiquitin-Specific Protease 1*	Alan D'Andrea
Valentina Rodriguez	*Trees and Treetops: A Study of Phylogeny and Natural History of the Orbiliomycetes in New England*	Donald H. Pfister
Michael Seward	*Nutrition Interventions at University Dining Halls*	Avik Chatterjee
Sam Smith	*A Comparative Characterization of Cranial Base Development as it Relates to Facial Growth in Seba's Short-tailed bat, Carollia perspicillata, and mouse, Mus musculus*	Arkhat Abzhanov
Julie Vu	*Investigating gene expression differences due to genome doubling in the autotetraploid Arabidopsis arenosa*	Kirsten Bomblies
Charlie Wolock	*Exploring the functional diversity of microbial communities within carnivorous pitcher plants*	Naomi E. Pierce

OEB SENIOR THESES, CLASS OF 2014

STUDENT	*TITLE*	DIRECTOR
Emily Burke	*Genetic variation and geographic differentiation in the ectocommensal marine triclad Bdelloura candida (Platyhelminthes, Tricladida, Maricola)*	Gonzalo Giribet
Inanna Carter	*Insect Community Assembly of Hawaiian Lobelioideae Plants (Campanulaceae): A Community Phylogenetic Study* [Graded "Exceptional"]	Charles C. Davis
Julia Clark	*Infection Dynamics of Syphilis in Communities of Men Who Seek Sex With Men Using Geo-Social Networks*	Rumi Chunara
Alexander Cunha	*Salmon-Derived Nutrient Flow in an Impacted Southern Watershed*	Andrew Richardson
Thomas Dai	*Wing Spectral Properties and Androconial Structures in Eumaeine Butterflies*	Naomi E. Pierce
Fayola Fears	*Uncovering the Genetic Basis of Adaptive Sperm Morphology in Peromyscus*	Hopi Hoekstra
Kristina Funahashi	*Six-Year Trends in Anterior Cruciate Ligament Injury Incidence in the General Population: Gender Differences in Injury and Reconstruction Rates*	Andrew A. Biewener
Tyler Gamble	*On Anolis bicaorum*	Jonathan Losos
Min Lee	*Impact of Diffuse Radiation Measurements on Modeling Carbon Budgets: A Model-Data Fusion Experiment at Bartlett Experimental Forest*	Andrew Richardson
Alison Liou	*Non-Enzymatic RNA Replication: Towards An Understanding of the Origins of Life*	Jack W. Szostak
Yue Meng	*A Candidate Gene Screen for Germ Line Markers and A Characterization of Oogenesis in the American House Spider Parasteatoda tepidariorum*	Cassandra Extavour
Alberto Rivera	*Assessing the role of tendon elastic energy, granular substrate, and pitch stabilization in J. Jaculus Jumps.*	Andrew A. Biewener
Georgia Shelton	*The Biodiversity of the Bees at the Arnold Arboretum* [Hoopes Winner]	Brian D. Farrell
Alex Stote	*A morphological analysis of the suction disc performance and inter-specific host association in the remoras (Percomorpha: Carangiformes: Echeneidae)*	George V. Lauder
Tanner Strickland	*Lizards bridging the gap: Phylogeography of the Puerto Rican Crested Anole (Anolis cristatellus) across the Puerto Rican Bank* [Hoopes Winner] [Graded "Exceptional"]	Jonathan Losos
Kathy Wang	*Revealing novel properties of a hybrid antibiotic and drug resistance interactions through evolution and whole-genome sequencing* [Graded "Exceptional"]	Roy Kishony
Felix Wu	*Small Colonies and Dwarf Cells: The Effects of Starvation Stress on* Escherichia coli	Ralph Mitchell

OEB SENIOR THESES, CLASS OF 2013

STUDENT	*TITLE*	DIRECTOR
Joseph Brancale	*A Bird's Eye View of Beak Shape: Understanding patterns and constraints on beak morphogenesis*	Arkhat Abzhanov
Zachary Herring	*The color of promiscuity: How personality influences the timing of molt and extra-pair paternity In the Superb Fairy-Wren (Malurus cyaneus)*	Scott V. Edwards
Natalie Jacewicz	*Ontogenetic transitions in morphology and behavior in anoles of the southern Dominican Republic*	Jonathan Losos
Fiona Jevon	*The importance of age and competition in driving red maple decline in a northeastern mixed deciduous forest*	J. William Munger
Courtland Kelly	*Old Ways and New Ways: Utilizing classic and revolutionary tools to examining the effects of temperature on flowering time*	Charles C. Davis
Alexander Kim	*Across the Bridge of the World: Isthmian sister species, canal-mediated invasion, and transoceanic dispersal in Macrobrachium, a pantropical genus of amphidromous prawns (Decapoda: Caridea: Palaemonidae)*	Gonzalo Giribet
Amanda Lu	*The recent evolution of Mycoplasma gallisepticum in house finches*	Scott V. Edwards
Anna McKenney	*Which side is up: The conserved role of ASYMMETRIC LEAVES1 in promoting adaxial identity in compound leaves*	Elena Kramer
Anita Murrell	*Energetic Costs of Ascending Flight in Bumblebees Bombus impatiens: To Bee or Not to Bee a Large or Small Individual*	Stacey Combes
Yangshu Pan	*Born to Burrow: The ontogeny of burrowing behavior in deer mice (Peromyscus)*	Hopi Hoekstra
Akhilesh Pathipati	*More Than Meets the Eye: Sensory Integration and Motion Prediction*	John Assad
Julianne Pelaez	*A Community of Third-Party Organisms on Ant-Plants*	Naomi E. Pierce
Ian Shields	*Driving Adaptive Radiations: Pressure of thermoregulation on display and microhabitat selection in three cybotoid anoles*	Jonathan Losos
Charesa Smith	*TRIM6: A Sentry for Antiviral Defense*	Joern Schmitz
Richard Stanley	*Effects of habitat disturbance on a montane bird community*	Jonathan Losos
Lila Strominger	*The role of dominant fungi in convergent carnivorous pitcher plants*	Anne E. Pringle
Alena Tofte	*How Trees Cope With Cavitation: Stem Xylem Refilling and Leaf Safety Margins*	N. Michele Holbrook
Elaine Tran	*Applications of Population Diversity Analysis in Malaria Eradication*	Dyann Wirth
Emily Unger	*Reconstructing the RNA World: A Study of Primerless Non-Enzymatic RNA Replication* [Hoopes Winner] [Graded "Exceptional"]	Jack W. Szostak
Olivia Weeks	*The molecular basis of dental development in A.mississippiensis, the American Alligator* [Hoopes Winner]	Arkhat Abzhanov
Bonnie Wong	*Reciprocal crosstalk of dendritic cells and natural killer cells*	Jack L. Strominger
Jelle Zijlstra	*Erinaceids and tarsiers from the Miocene of Pakistan: A study of systematics, phylogeny, and biogeography, with the description of a new genus and two new species*[Graded "Exceptional"]	Hopi Hoekstra

OEB SENIOR THESES, CLASS OF 2012

STUDENT	*TITLE*	DIRECTOR
Annabel Beichman	*Gut Flora of the North Atlantic Right Whale: The 0.2µm Inhabitants of a 17m Leviathan*	James J. McCarthy
Bianca Lec	*The Nose Knows? A Study of MHC, Fitness, and Mate Choice in a Petrel*	Scott V. Edwards
Kevin Lin	*You've Got Tail: Analyses of caudal vertebral variation in the deer mouse Peromyscus maniculatus*	Hopi Hoekstra
Julian Moll-Rocek	*The effects of selective logging on Bertholettia excelsa natural regeneration: An investigation of compatability for multiple-use forest management in Madre de Dios, Peru* [Hoopes Winner]	N. Michele Holbrook
Kimberly O'Donnell	*Life in a Warmer World: Investigating the Physiological and Molecular Basis of Flowering Time Responses to Climate Change*	Elena Kramer
Riva Riley	*Same- and mixed-species schooling dynamics in Corydoras aeneus* [Hoopes Winner]	David A. Haig
Hanny Rivera	*Effects of the herbivorous gastropod Cerithium litteratum on the settlement and post-metamorphic growth and survival of the brooding coral Porietes astreoides*	Robert M. Woollacott
Guo Xuan Teo	*Sculpting the Flower: A Single Gene Duplication Underlies Complex Patterns of Functional Evolution in the Columbine Flower (Aquilegia)* [Graded "Exceptional"]	Elena Kramer
Lu Wang	*The Role of a Floral Repressor (FLM) in Environmental Adaptation of Flowering Time in Arabidopsis Arenosa Ecomorphs: subspecies arenosa and borbasii*	Kirsten Bomblies
Grace Xiong	*Quantifying Center of Mass Motion in Swimming Fish: effects of speed and locomotion mode*	George V. Lauder
Serena Zhao	*A fungus among us: the distribution of Laboulbeniales on Carabid and Coccinellid hosts*	Anne E. Pringle