The combined sponsorship statement has to be less than 3 pages. I’ll combine them when I hear back from you.

CURRENT RESEARCH and FUNDING

Dr. O’Meara and his lab group build and apply comparative methods in phylogenetics. Ongoing works includes a model linking population genetics and phylogenetics models, approximate Bayesian computational approaches for traits evolving on phylogenies, methods to calibrate phylogenies and make these available to the public, outreach approaches letting educators use the tree of life, empirical work on dung beetle phylogeny and fish evolution, reviews of biogeography and diversification methods, and continued extension of diversification models. Current funding includes NSF DBI-1458603 (open infrastructure for phylogenetic knowledge), NSF DEB-1453424 (CAREER grant on ABC for comparative methods), NSF DEB-1355033 (population genetics and phylogenetics), as well as a DDIG on fish evolution for the work of a graduate student in the lab. There is also a grant in review on innovations in graduate education and two proposals in preparation; one on Rules of Life regarding evolutionary layers from hidden state models, and one on diversification models with continuous, evolving rates. The fellow would work directly with Dr. O’Meara as well as participate in the vibrant lab community. The research most closely complements the ABC trait evolution work. In this work, repulsion between species is possible, unlike many comparative methods, but it is extremely simple, being based on one trait. The current proposal has a much richer, more biologically and geographically realistic model for interactions between species, and so the two approaches can help one another. We also work on databases and interfaces to databases within the lab as well as web scraping for data in general, so assisting in the analysis of ALA data is squarely within our skill set.

DEVELOPMENTAL PLAN

Dr. O’Meara has trained sixteen postdocs directly and, as associate director for postdoctoral mentoring for the National Institute for Biological and Mathematical Synthesis, assisted in the vocational training for many more. Training starts with a frank conversation with the postdoc on their professional goals and their strengths and weaknesses. This translates into a plan for acquiring necessary skills: recommendations for reading and exercises and discussions throughout the training. For this project, skills to work on will be developing and testing comparative methods and software engineering best practices, among others.

SPONSORSHIP ROLES and RESOURCES

Every lab member meets individually weekly with Dr. O’Meara. We also have a weekly lab meeting that is done via teleconference for all participants, so that all participate equally regardless of location: the lab frequently has members who do all or some of their postdoctoral work away from Tennessee (members have worked from France, Texas, West Virginia, and Colorado). There is also an active lab chat room and occasional mini hackathons to help build teamwork and computational skills as well as online discussion groups for papers. Looking over paper drafts and job application materials is standard, as are frequent discussion on current topics in evolution, best practices in coding, and vocational training (how to teach, how to write research statements and grants, and similar). The lab has access to computers to use for any computationally intensive analyses or simulations and servers to use to host any tools.

LIMITATIONS

There is no limitations on the research: the postdoc can freely continue working on it, continuing to collaborate or not as he sees fit.