The Center for BioComplexity Welcomes Three New Postdocs Who Will Join other Center and Levin Lab Members in Interdisciplinary Research on Sustainability and Resiliency Funded by a Gift from William H. 'Bill' Miller III

The Center for BioComplexity in the High Meadows Environmental Institute is excited to welcome three new postdoctoral researchers, the initial cohort made possible in whole or in part by a generous gift from **William H. 'Bill' Miller III** to provide resources for interdisciplinary research in the fields of sustainability and resiliency. They will be joined by several current postdoctoral associates and graduate students who will also receive support from the gift.

Annie Stephenson is joining us from Harvard University, where she received her Ph.D. in Applied Physics, building computational models for light scattering. She is especially interested in the emergence of large-scale collective behaviors, and in applying what she has learned to social dynamics, particularly in human social systems. She will also receive support from HMEI and from the Office of the Dean for Research to join our active collaboration with the Stockholm Resilience Centre and the Potsdam Institute for Climate Impact Research.

Giuseppe M. Ferro arrives from ETH Zurich, after receiving an MD in Complex Systems Physics and a Ph.D. developing models of individual decision-making in risky and ambiguous choices, with special interest in a range of applications of decision theory, ranging from microeconomics and finance to management and organization science. He wants to expand this work to evolutionary models of collective human behavior and will also be supported by a highly competitive Swiss Mobility Grant.

Guillaume Falmagne joins us from LLR (École Polytechnique, Palaiseau/Paris, France), where he received a Ph.D. in physics studying the quark-gluon plasma by analyzing data of the heavy-ion collisions of the CMS detector at the LHC (the largest particle accelerator in the world, at CERN, Geneva). As with his colleagues above, he is interested in the emergence of collective phenomena, and in applying his approaches to social and ecological networks, and especially human societies.

Also receiving support from the Miller gift will be **Benjamin Schaffer**, who received his Ph.D. with Ignacio Rodríguez-Iturbe from Princeton several years ago and has been doing postdoctoral work with H. Vincent Poor and Simon A. Levin on pandemics for the past several years. Ben will continue with this work, jointly supported by H. Vincent Poor, and focusing on the multi-scale dynamics associated with levels from the immune system to populations of individuals.

Associate Research Scholar **George Hagstrom** will continue to be supported from a number of sources, including the Miller gift and the National Science Foundation, developing trait-based models of heterotrophic bacteria and phytoplankton, and studying marine ecosystems as complex adaptive systems. A special focus will be on emergence and critical transitions.

In addition, several graduate students will be supported on the Miller funds. Initially these will include **Maximilian Nguyen**, a fourth-year QCB student, and **Matthew Cheung**, a third-year in PACM. A third student will join later. Max is quantifying structural heterogeneity in social

network models and its connection to intermediate features during the dynamics of an epidemic, exploring the efficacy of combinatorial Ricci curvature in distinguishing network topologies and epidemic behaviors, and developing a variational method for coarse-graining heterogeneous networks that preserves spectral properties. Matthew is interested in incorporating social behavior into epidemiological models, understanding the importance of network structure and heterogeneity in socioecological models, the coupled dynamics of spreading information and disease, and the implications of intergenerational resource transfers for the dynamics of wealth distributions.

Overall, the Miller gift has provided an exciting focus on complex systems across a range of applications, and the core of a diverse community of outstanding students, postdoctoral researchers, and research scholars. We are very grateful to Bill Miller for his vision and confidence in the Center for BioComplexity.