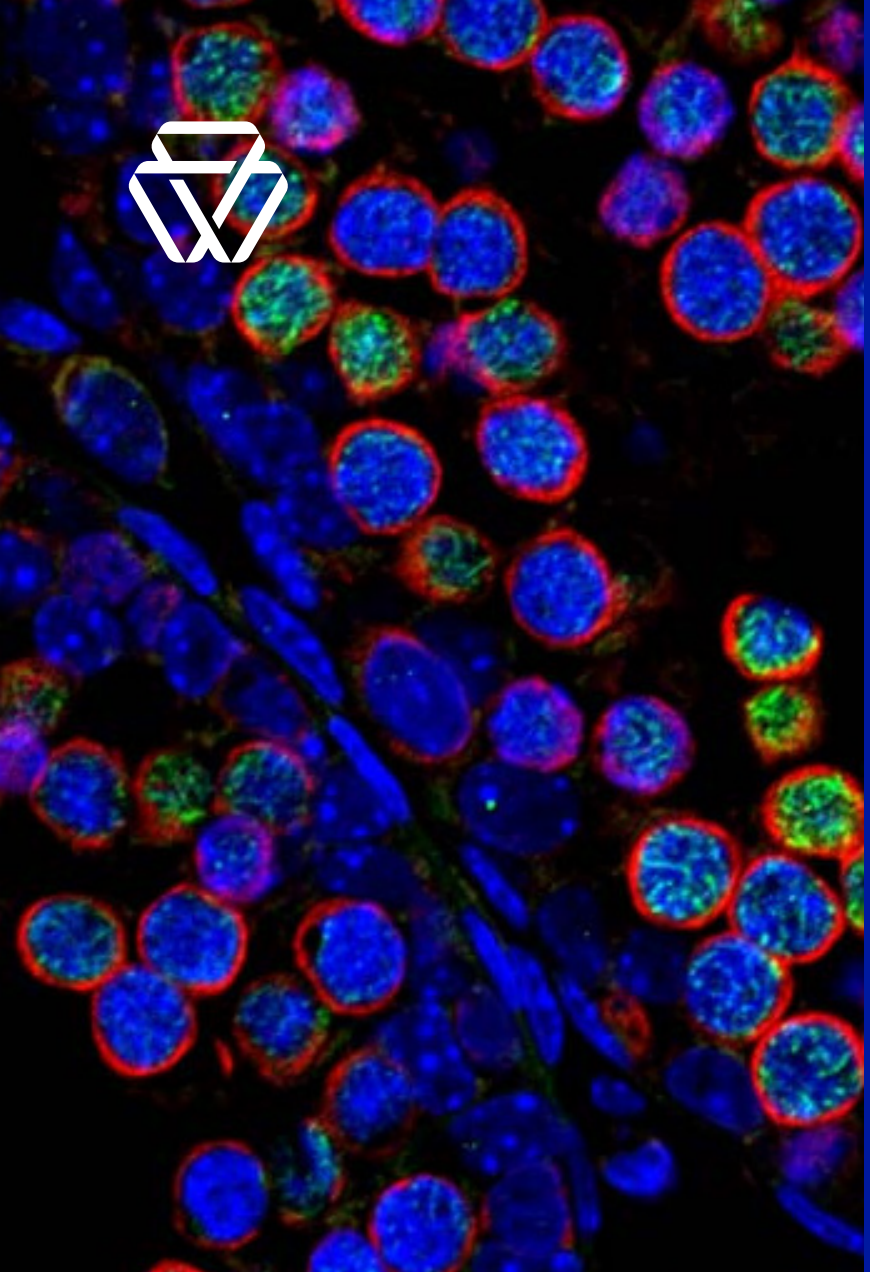

The Whitehead initiative in biology, health, and climate change

Climate change is having severe negative effects around the world: from fast-hitting events such as intense hurricanes and rampaging wildfires to slower-moving crises such as drought, famine, and spreading infectious diseases.

Those are just the effects we can see. What biological effects of climate change are not yet apparent? What currently unrecognized impacts will it have on human health and wellbeing in coming decades? Beyond those already in harm's way, billions of people will be at risk if global society cannot develop methods for anticipating, understanding, and mitigating climate change's multifaceted effects on human health.

But science's current ability to meet this challenge is hampered by limited fundamental knowledge about how increased temperature affects biology; and by a lack of biotechnological tools to begin addressing detrimental effects.

Whitehead Institute believes that climate change is an existential crisis for humanity; further, that we must help create the fundamental scientific knowledge and biotech tools necessary to protect human health in the face of the emerging challenges. The Whitehead Initiative on Biology, Health, and Climate Change (WIBHC) is designed to explore the biological impact of climate

change's effects and determine their implications for human health. And it will build research foundations for biomedical and biotech interventions that could help prevent or mitigate detrimental impacts on health, food security, and natural systems on which people rely.

At its outset, WIBHC will pursue work in three realms:

Plant Biology — where, for example, Member **Mary Gehring** is working to create seed-producing plant varieties that are more robust, have a higher yield, and are adapted to climate change; and Member **Jonathan Weissman** is developing biotechnology tools for plants that make it easier to identify genes that are important for plant function and resilience.

Infectious Disease — where, for example, Founding Member **Rudolf Jaenisch** and Member **Sebastian Lourido** are developing stem cell-derived organoid models of infectious diseases – to evaluate the risk that specific pathogens present to humans – and exploring how climate change affects specific infectious organisms and their vectors.

Cellular Processes Under Stress — where, for example, Member and Director **Ruth Lehmann** is investigating specific effects of temperature increase on organism reproduction, and Member **Siniša Hrvatin** is exploring animal hibernation and torpor.

Across those realms, WIBHC is driving fundamentally important scientific discovery, on our own and in collaboration with scientists and organizations. It is creating and disseminating innovative tools and methods — enabling researchers across the globe to drive their work forward. And it is helping catalyze development, application, and commercialization of concrete solutions to the most significant environmentally driven challenges facing humanity.

The return on our investments in those efforts will be substantial, broad-ranging, and multifaceted: It will help to protect and improve human health while catalyzing technology development and economic growth — all on a global scale.

In this way, WIBHC will have a robust and far-reaching impact on human health for decades or centuries to come.

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