Scientists get boost to develop fresh climate change solutions

With approximately 40,000 scientists graduating annually from PhD programs in the U.S. alone, imagine the climate-change innovation they are capable of addressing? However, when an entrepreneurial scientist has an idea, it typically takes considerable time in the lab to develop. Lab time is expensive—not just the cost to use the lab itself, but also equipment and materials. Once the solution is developed, the scientist needs funding and time to successfully launch. These challenges can be daunting and significant barriers to entry for scientists looking to develop new climate tech solutions.

After launching his own science-based startups and seeing these challenges, Ilan Gur recognized the opportunity to provide greater support for the innovation ecosystem through Activate Global (Activate). In 2015, Activate began its journey to support scientists with physical and/or biological science innovations with fellowships at Cyclotron Road, a division of Lawrence Berkeley National Laboratory (also a founding Activate partner).

Activate provides support for fellows for two years with wages, lab time, access to funding, entrepreneurial education, and network support to both develop their solutions and launch them successfully as businesses. This unique model connects its fellows with U.S.-based funders and research institutions—with no fees or equity in exchange for participation. The support for research, raising funds, manufacturing, and marketing each business is designed to meet the needs of first-time founders at the earliest and riskiest stages of technical and business development. With a commitment to create a better future for all, the organization actively promotes diversity, equity, inclusion, and belonging (DEIB).

As Activate grew beyond the Bay Area (Activate Berkeley) to Activate Boston and Activate New York, it became apparent that there was an opportunity to enable scientist entrepreneurs to become fellows outside of these traditional centers of innovation. The remote Activate Anywhere was established to give scientists access to Activate fellowships from any location in the U.S.—no need to move and uproot their own professional ecosystems and support—with all of the same benefits that are provided at the geographic-specific hubs.

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Following are just a few examples of how Activate fellows are developing and launching successful businesses to meet climate and other global challenges.

Zero-emissions steel production using light energy

When Limelight Steel founders Olivia Dippo and Andy Zhao applied for a fellowship via Activate Anywhere while founding their company during their PhD program at UC San Diego, they were just "scientists with a wild idea for how to decarbonize the steel industry" (which currently contributes more than seven percent of global CO2 emissions).

Rather than burning coal to smelt iron ore, their innovation reimagines this 2,500-year-old technology by tuning light energy to heat iron-oxide efficiently and rapidly, similar to how microwaves are tuned to quickly heat water. As a result, Limelight uses about 40 percent less energy than other steelmaking techniques—reducing the cost to sustainably convert iron ore into iron and steel.

Capturing carbon to develop products typically made from fossil fuels

When Etosha Cave, co-founder of Twelve, first met Activate's founder Ilan Gur, she was on the verge of taking a traditional industry job and leaving her days as an academic researcher behind. Convinced Etosha and her carbon-capture and transformation research held incredible potential, Ilan encouraged her and her co-founder, Kendra Kuhl, to take a chance on entrepreneurship and join the first cohort of Activate Fellows in 2015. Today, the Twelve carbon transformation device converts captured CO2 emissions into inputs for jet fuel, car parts, laundry detergent, sunglasses, and more.

Decarbonizing cement production

Not only is cement production responsible for eight percent of global greenhouse gas (GHG) emissions, but it is also a notoriously challenging industry to decarbonize. Fortunately, fellow graduates Cody Finke (Activate Berkeley, Cohort 2019) of Brimstone Energy and Leah Ellis (Activate Boston, Cohort 2020) of Sublime Systems were able to approach decarbonization from different angles—Cody, by making carbon negative portland cement with carbon-free calcium silicate rock instead of limestone, and Leah, by replacing the industry's legacy fossil-fuel-intensive thermal kiln with an electrochemical process. Together, they are turning one of the world's most intractable climate problems into a climate solution.

Expanded geothermal energy production

When Tim Latimer and Jack Norbeck of Fervo Energy applied to the fellowship, Activate immediately recognized the impact their geothermal energy technology could have at scale. By pumping cold water underground, heating it using the earth's temperature, and bringing it back to the surface, geothermal energy is converted into electricity using a highly efficient process that emits no carbon or harmful pollutants and injects 100% of the water back into the ground. Using advanced drilling techniques, fiber-optic sensing, and cloud-based analytics, Fervo Energy is able to build, own, and operate 24/7 carbon-free power plants and has signed agreements to provide geothermal energy to regional grids across California.

Activate: the path ahead to transforming the world for the better

Activate began with a vision to support the best STEM scientist innovations as they transition from the laboratory to commercialization beginning with its Berkeley, California location. Thanks to the success of this model and its fellows and alumni, Activate looks to doubling its geographic footprint from four to eight communities and from 40 fellows annually to 100 per year with the support of a $20M commitment from the National Science Foundation and many others.

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About Activate Global

Activate empowers scientists to reinvent the world by launching startups to address climate change and other global challenges. Working between government, philanthropy, universities, and the private sector, Activate transforms scientists into high-impact entrepreneurs through the Activate Fellowship, a two-year immersive experience that provides funding and fosters the resources, knowledge, networks, investors, and partnerships that fellows need to succeed. Activate's entrepreneurial fellowship model originated at Cyclotron Road, a division of Lawrence Berkeley National Laboratory and founding Activate partner. Cyclotron Road is also supported by the Department of Energy's (DOE) Advanced Manufacturing Office as one of four Lab-Embedded Entrepreneurship Programs. Since 2015, Activate has supported 142 fellows in founding 106 companies, which have collectively raised more than $1.3B in follow-on funding. Activate hosts fellows across the United States at Activate Berkeley, Activate Boston, Activate New York, and Activate Anywhere. Learn more at Activate.org.

About ESG at MUFG

MUFG is committed to empowering a brighter future. As a global financial leader, we believe that environmental, social, and governance (ESG) considerations are essential to achieving sustainable growth. Our corporate mission – and a key part of our identity – is to be a foundation of strength, committed to meeting the needs of our clients, serving society, and fostering a better world. The MUFG Carbon Neutrality Declaration pledges to achieve net zero emissions in our finance portfolio by 2050 and our own operations by 2030. By combining our ESG expertise and heritage of client-centricity, we provide our clients with wide-ranging and complementary products, services, and advice to help them meet their financial goals, while also staying true to their sustainability mandates.

Review our latest Sustainability Report and Carbon Progress Report for more on our goals and actions toward achieving sustainable growth.