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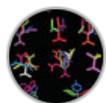
## Bioprocessing

Choosing the Right CMO



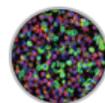
## Drug Discovery

Targeting Protein-Protein Interactions



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Feb 28, 2013

# Distributed Computing Meets Drug Discovery

A new not-for-profit with a biopharma focus is working to create a community of researchers willing to give unused computer time toward discovering and investigating new **small molecules** for drugs to fight diseases.

It's the same approach employed by the Search for Extraterrestrial Intelligence at Home (SETI@home), the world's largest distributed computing effort and a project of the University of California-Berkeley. Since 1985, more than three million volunteers have allowed their Internet-connected computers to help SETI@home fulfill its mission of exploring, understanding, and explaining the origin, nature, and prevalence of life across the universe.

**Quantum Cures Foundation** co-founder Lawrence Husick says his group's short-term goal is to raise \$500,000 to accelerate its work and build the software out more quickly for more platforms. The foundation envisions tens of thousands of users of desktop computer, mobile tablets, and even smartphones worldwide—both researchers and hobbyists—allowing their devices to be used for research purposes during off-hours.

The foundation will focus primarily on orphan and rare diseases as it builds its community, which it hopes will replicate SETI@home in size. While it won't be the first distributed computing effort in life-sci—Folding@home, based at Stanford University, links 165,634 computers worldwide to examine how proteins fold—Quantum Cures will allow disease-focused groups to form teams and contribute computing capacity to solve problems of interest to them.

"The speed with which solutions come will be directly proportional to the number of people who jump on board, wanting to solve that particular disease problem," Husick told GEN. "Things like malaria and schistosomiasis are certainly high on our list, but it's really up to the individual researchers to propose to us a particular target that they would like us to work on, to try to build them a candidate list of small molecules. They will drive this process."

Husick, an early SETI@home user, is a partner at the law firm Lipton Weinberger & Husick, and co-founder, in-house counsel, and CIO of TeraDiscoveries, which uses an in-silico drug design software and substitutes cloud-computing techniques for wet chemical synthesis and biological assay of drug candidates.

TeraDiscoveries is contributing its Inverse Design software, developed with Duke University and Microsoft, at cost to the effort, whose BOINC open-source software platform is set for a second-quarter launch. UC Berkeley makes BOINC available for crowdsourced computing purposes that include biopharma research.

A free screensaver needed to take part in Quantum Cures will be available by the end of June on a limited basis at the group's website, [www.quantumcures.org](http://www.quantumcures.org).

The foundation is talking to groups focused on particular rare and **orphan diseases**, as well as researchers, to establish a queue of problems to be tackled.

"Where we contribute is in bridging the chasm between a protein structure of a target, and having a drug candidate molecule with the right characteristics, such that it will be synthesizable, drugable, nontoxic, and bioavailable," said Husick, who developed the prototype of his first commercial search system, Homework Helper, on a NeXT computer given him by Steve Jobs himself.

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"We're working with these groups that fund or coordinate the research in an effort to identify those researchers who may have protein targets that are implicated in the disease, but perhaps do not have the wherewithal in time or money or both to screen the millions of potential drug candidates in the old way, doing it in the laboratory using wet chemistry," he added.

Husick holds five U.S. patents related to two Internet research sites, Electric Library and Encyclopedia.com. Both were launched by Infonautics Corp. (now HighBeam Research), where he was co-founder and principal system architect.

Quantum Cures has named board members and technical advisors that include:

Ed Addison, co-founder, chairman, and CEO of TeraDiscoveries, and an adjunct faculty member at North Carolina State University.

Stephen Sinclair, M.D., a retinal surgeon, and adjunct professor of ophthalmology at Drexel University Medical School.

Joseph Becker, M.D., diagnostic radiologist and visiting professor of radiology at Temple University Hospital and School of Medicine, Cooper University Hospital, Robert Wood Johnson School of Medicine of the University of Medicine and Dentistry of New Jersey, and Christiana Healthcare System.

Quantum Cures timed its announcement to coincide with today's sixth annual international Rare Disease Day. The day's sponsor is EURORDIS, a nongovernmental alliance representing 561 rare disease patient groups in 51 countries worldwide.

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- Yes, in all cases
- Yes, but only in cases where the crime is particularly serious (e.g., rape, murder)
- No, the ethical concerns are far too great

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