

The University of the Future



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Encouraging academics to work in teams will help remove the stigma of failure and accelerate scientific progress.

Scientists are recognizing the advantages of working in collaborative teams, seeing that they might take on bolder, more exciting challenges in such environments. However, team efforts and disruptive science are being inhibited by two major motivational barriers — the federal government funding model and the reward/punishment policies in academia.

Failure in academia is a death knell, often rapid, always torturous. The pressure to maintain continuous funding and a high pace of publications demand that most investigators establish a research focus and stay with it, nose to the grindstone. Obviously, choosing to take a focused path can be productive and rewarding, but doing so under duress of the academic

culture can be punishing, where branching out to probe an audacious idea can start a spiral of lost funding, lack of trainee interest, slowed promotions. The result is that universities are gathering points for brilliant, hardworking researchers, working diligently and making progress in isolation, indeed commonly competing among intellectual silos housing basic, clinical and social/behavioral/ population research.

At the same time, we are drowning in information. Researchers struggle to keep up with their own fields, so can't fathom learning in any depth about important questions outside of their scope — questions that they might be able to address if they knew about them. Colleagues in every institution are missing

opportunities to team up right across campus to take on new exciting challenges.

What can be done to address this problem? Imagine if we built a knowledge network, a computational brain, capable of aggregating and integrating the mountain of information being generated by a university's researchers. The network would visualize everything that is happening across departments and disciplines, placing in proximity studies linked by intellectual focus, by technology, by experimental approach — any sort of routine selected by the viewer. Researchers could self-assemble collaborative teams that could define and address from different angles a difficult but exciting problem that none could address individually.

In this University of the Future, every faculty member would participate in multiple teams; established faculty might be involved in about 10. Each team would apply a team-determined blend of disciplinary approaches and technologies to solve its team-defined problem. Because the problems are bold, the ideas may be wrong, the technologies may prove insufficient — the team may fail. But it would be okay — there are other problems being hotly pursued by other teams in each investigator's portfolio, and some of them will succeed. So, failure would be de-stigmatized, and as in Silicon Valley, "failing fast" would be a plus.

The freedom to succeed would be unleashed by the freedom to fail.

So the University of the Future would be dynamic — fluid teams with constantly changing partners asking bold questions with big potential impact. To get there, academic culture change, always a challenge, would be essential. And the funding

system would need an overhaul, identifying and supporting bold ideas proposed by teams, with initial seed grants that could escalate as defined milestones are achieved. Strong, well-justified motivation is the best driver of policy change.

Creating knowledge networks would benefit patients as well. The network would be open, not just for scientists, and the projects would be public. A patient could investigate his or her condition on the network to understand what is being researched.

Indeed, patients could pose research questions to the teams. Building clinical trial networks is good, but we can expand the ways that patients participate in the research

enterprise. We can give them a real appreciation for what research is doing for them and an ownership share in the enterprise.

The University of the Future could incentivize self-assembly of collaborative teams that span the full research, health and health-care spectrum, opening opportunities to address vexing scientific and societal issues, many perhaps yet unimagined, that seem otherwise impenetrable.

What can be done to address this problem?

Create a knowledge network that collects and connects the information generated by our universities

Enable and reward faculty to work in multiple teams, each probing a hard problem

Freedom to succeed is unleashed by the freedom to fail

