Laboratory without walls

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International networking has become indispensable to research. But are we making best use of the tools and programmes available?

With the launch of the EU's Horizon 2020 research programme, my mailbox began to overflow with so-called partner-search inquiries. But few of these requests came from scientists, and even fewer from scientists I knew. Mostly, they originated from university 'research officers', desperate to find credible parties to concoct a funding application to swell the flow of overheads that enable them to exist. My own university joined the feeding frenzy by offering me a substantial grant to conduct preparatory work for a H2020 application. Presumably, they believed that I would need to mount a marketing scam of my own to find the right constellation of participants. However, I already know what project I will pursue and who my co-applicants will be. If my plans don't fit the EU's funding priorities, we'll just apply elsewhere and do the project anyway. My university's special grant may come in useful to employ a turbo-charged secretary, but sending out spam mails will not be part of the job.

Back in the 1980s, when the EU first launched its science programmes under the slogan 'a laboratory without walls', I willingly immersed myself in filling out those quaint, optically readable documents. Even back then, my application partner, in an unnamed Mediterranean country, was somebody with whom I was already collaborating. Scientists in such countries are perennially on the brink of financial meltdown, so the project was also a lifesaver for her laboratory.

In fact, when I visited her for our first progress meeting, the concept of a laboratory without walls was brought starkly home to me. Her university's 'new' science campus, the construction of which had been initiated some 20 years earlier, was still not ready for occupation. As is common in many countries, 15% of the original budget had somehow found its way into other hands, and the contractors had simply walked off the job once the shell of the buildings was in place. All the internal walls, fixtures and laboratory equipment were missing and had to be funded over a long period of time, presumably by dribbles of someone else's 15%. By the time of my visit, the 'new' campus was heavily overgrown, looking much like one of those ancient Mayan cities must have appeared shortly before vanishing for centuries beneath the jungle.

The concept of a group of scientists in different countries contributing complementary expertise to a joint project has much to recommend it, though is clearly not the only way to do science, as the success of the ERC's single-investigator grants demonstrates. In the USA, highly structured, multipolar science is virtually unknown. Many US colleagues nevertheless express support for the idea and wish that they had access to such funding.

Where we often fall down is in the execution. PIs are understandably reluctant to cede control of their work, so that the coordinator of a multinational project is typically no more than a compiler of reports and the distributor of funds. In fact, many grandiose joint projects turn out to be nothing of the kind: just a bunch of PIs doing their own thing, linked by an impressive list of keywords and a craftily written research plan that extols the

virtues of complementarity, solidarity, subsidiarity, conformity with competitiveness policy, social relevance, gender equality actions and all the other boxes that need to be ticked. Although the funding can and often does end up supporting good science, its real impact on the problem supposedly being addressed is typically dilute. Too often, support goes to diffuse projects with aims that sound impressive in a brochure for parliamentarians, but are, in fact, unrealizable.

I believe there should be much greater emphasis on focused projects which mobilize resources in different partner laboratories towards a realistic goal. In this way, we might actually make progress towards the grander objectives that most of us pursue, and perhaps even satisfy the policymakers in the background. Instead of a coordinator, such projects need a director. This does not mean that we should have big-boss scientists and others who are subservient. We can each take different roles in multiple projects: leader of one, task-assignee in another, advisor of a third and so on. This can work if we engage with each other on a reciprocal basis that respects individual skills and strengths. Partners in any one project may not contribute equally, but all must be properly acknowledged and their contributions valued. The most important aspect is that networks must be built on trust and mutuality, for which personal chemistry is essential.

Agencies like the EU should do more to encourage and facilitate this way of working, prioritizing projects that have clear goals and strong leadership, and which inspire and mobilize the right team to produce a concrete outcome.