

▶ Like most life-sciences fields, synthetic biology faces issues with reproducibility (see *Nature* 515, 7; 2014). It has proved difficult for labs to replicate strains engineered by others, which is hampering progress in industry and in academic research. One lab may not provide enough information about how a part was made for another to reproduce the work. Or researchers may toil to refine a process, only to find that the developer has already done that work without reporting it in the literature.

“It’s just difficult to know all the information out there, because there isn’t a set of standard ways to describe what we know about a biological resource,” says Ryan Ritterson, a synthetic biologist at the University of California, San Francisco.

Synthetic biologists who work in industry pushed for standards that would simplify commercial decisions. For instance, organisms that make products well in the lab do not always work when grown to bigger scales. Boyle advocated the development of ‘reference strains’ whose behaviour has been characterized in different types of fermentation equipment and growth media. This is particularly important to companies that want to understand whether variations in manufacturing efficiency stem from the organisms or from external factors.

The NIST-led effort is not the first attempt at standardizing the tools and methods of synthetic biology. The Synthetic Biology Open Language project is an online consortium that is developing standard nomenclature, symbols and other tools to describe engineered systems. The BioBricks Foundation has designed a licence to facilitate the free exchange of biological parts. And several repositories make and distribute such parts.

But those efforts have addressed only some of the reproducibility issues in synthetic biology. Parts in some of the repositories do not always work or are mischaracterized. Not all companies want to use parts that are in the public domain, or contribute their components to these repositories. And the field has moved on since some of the standards were set; for instance, the standard method for assembling BioBricks can be slower than newer methods for making complex DNA assemblies.

Meeting participants said that they hoped that the NIST initiative’s inclusion of researchers and companies would help it to overcome some of those problems. “We had people coming from different areas who all have different stakes in the outcome,” Ritterson says, “and rather than dividing into factions and deciding what standards would work best in our applications, we had thoughtful conversations about the standards that would work best for the entire community.” ■



Tom Kariuki will head a funding platform for African research that is due to be launched in June.

DEVELOPING NATIONS

Africa aims for research autonomy

Regional hub intends to manage international grants and develop science strategy.

BY LINDA NORDLING

African scientists look set to gain greater control over research in their own countries, if an ambitious plan for a regional hub to award grants and develop research capacity bears fruit.

Three international funding bodies are giving seed cash of around US\$4.5 million to establish the Alliance for Accelerating Excellence in Science in Africa (AESA). The London-based biomedical charity the Wellcome Trust also hopes to transfer the management of millions of dollars in its research funds to the alliance. AESA’s other two backers are the UK Department for International Development and the Bill & Melinda Gates Foundation in Seattle, Washington. The idea is that AESA will be a platform for managing Africa-focused research programmes and a think tank to direct the continent’s science.

“Science can and will transform Africa. But to get there, we must train critical numbers of excellent scientists in all corners of Africa. That is the mission of AESA,” says Tom Kariuki, a Kenyan immunologist who was appointed as the alliance’s director in March. It is due to be

launched in June by African heads of state, and will operate out of the headquarters of the African Academy of Sciences in Nairobi.

REMOTE CONTROL

For decades, African science capacity and research output have lagged behind those of the rest of the world. But they are now taking off in fields with clear impacts on African development, such as health and agriculture, in nations including Uganda, Kenya, Ghana and Nigeria (see *Nature* 474, 556–559; 2011). One problem is that overseas funders still supply a large chunk of the research cash and decide where and how it is spent.

“Much of the research done in Africa is still predominately financed by global funders from Western Europe and the United States, and still managed from Western capitals from funders’ head offices,” says Kariuki (see ‘Funding from abroad’). That has limited the impact of such research, in part because it matches priorities set outside Africa. Funding is in short supply for studying neglected tropical diseases, for example, and funding for HIV research is not always directed at the countries in the greatest need. African researchers can also struggle to keep

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SOURCE: NEPAD teams together once overseas grants run out. “It’s weird that for 40 years, the agenda-setting and the funding decisions for research in Africa has been done from London, Seattle, Geneva or wherever,” agrees Kevin Marsh, a clinical epidemiologist at the University of Oxford, UK, and a senior adviser on the AESA initiative.

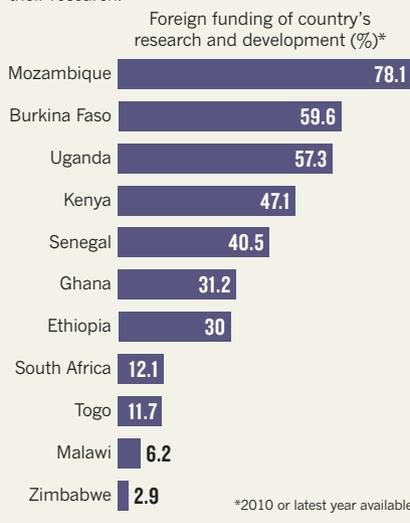
Instead, AESA will invite funders both on and outside the continent to delegate the peer-review and grant management of their African programmes to the alliance. The idea is to shift the centre of gravity for African funding decisions to the continent, says Simon Kay, head of international operations at the Wellcome Trust. AESA wants to create more buy-in from African governments on the research being done, Kay adds.

MONEY MANAGEMENT

As a start, the Wellcome Trust is considering handing over the management of its five-year, £40-million (US\$60-million) Developing Excellence in Leadership, Training and Science initiative to AESA later this year. This programme, launched last September, aims to build up research capacity and train leaders who can drive regional agendas, by awarding competitive grants, initially in health research. It expects to announce the winners of its first crop of applications in May. The charity will cede more control only if it is sure that Nairobi can

FUNDING FROM ABROAD

Many African nations depend on foreign grant money (often from overseas organizations) to fund their research.



manage the programme to its own standards — so AESA staff will undergo a year of training.

Marsh says that other funders have signalled their eagerness to hand over programmes to AESA. “Let’s say we start with £40 million. I’d be disappointed if in a year’s time we haven’t at least doubled that. And in the long term, we

have to move to hundreds of millions,” he says.

The funding cannot come just from international donors, African scientists agree. “This is a great initiative. But it will be still-born unless African governments put money into it,” says Salim Abdool Karim, a clinical epidemiologist and director of the Durban-based Centre for the AIDS Programme of Research in South Africa. The hope is that AESA would be attractive because it offers governments a way of awarding merit-based science grants without having to train their own grant managers and set up research funders nationally.

A smaller partnership has already been attempted by the European Union: from 2011 to 2013, it gave €14 million (US\$15 million) to the African Union in Addis Ababa to manage competitive grant calls in research areas including agriculture, water and sanitation. But African governments have not followed up on that effort by chipping in with their own money.

AESA has not yet secured any African national government funding. But it will receive \$500,000 towards its setting up from the New Partnership for Africa’s Development, a continental body for making and implementing policy, with headquarters in Pretoria. Kariuki says that AESA will also lobby African governments to support research in their own countries. ■