Moving bottom-up science closer to the top

To secure Europe's leadership in research and innovation, the European Union should prioritize its investment in researcher-originated projects.

Economic malaise in Europe is certain to influence upcoming decisions about research funding. We hope that the continuing trend of allocating more funds to researcher-initiated, or 'bottom up', projects will not be watered down or subjected to political constraints during the final budget negotiations.

In 2 years, the EU's new funding program for research and innovation, Horizon 2020, is set to carry the torch from the current Seventh Framework Program, or FP7. Horizon 2020's funds are now being negotiated, and approval by the European Parliament is expected towards the end of this year.

Horizon 2020's guiding theme is support for innovation. Its proposed total 6-year budget is €80 billion, a commendable increase from FP7's total 7-year budget of €50 billion. Horizon 2020 is to have three main funding priorities: science, industrial technologies and societal challenges.

At a time when Europe is facing economic difficulties and EU budgets are highly scrutinized, decisions on how the available resources are to be allocated under Horizon 2020 are of critical importance.

As it stands, researcher-originated initiatives funded by the European Research Council (ERC)—a pan-European organization of 22 elected scientists set up in the FP7 framework—will see a 77% funding boost. This increase to €13.3 billion, from €7.5 billion in FP7, seems in line with one of Horizon 2020's main goals of promoting 'excellent science'.

As described in a previous Editorial (*Nat. Methods* **4**, 295, 2007), the ERC manages funds that foster cutting-edge projects in all scientific fields. Creating these grants addressed a gaping hole in EU Framework programs before FP7 and provided a mechanism to support projects without constraints on research topic or the number and country of origin of labs involved.

ERC grants are highly competitive, researcher-originated grants intended to support individual young or senior investigator labs, collaborative projects or proof-of-principle initiatives into the early stages of product industrialization. These grants have led to 1,600 peer-reviewed articles in high-impact journals between 2008 and 2010, which documents the success of this funding, according to the ERC website. Horizon 2020's boost to the ERC grants will help promote high-quality European science further.

On the other hand, the €13.3 billion that the ERC is to receive represents only 16.6% of Horizon 2020's total proposed budget—a rather meager increase from the 15% that it received in FP7's total budget.

Following the trend of previous Framework programs, including FP7, a large slice of Horizon 2020's budget is devoted to research that is topic-defined, or 'top down'. These funds support projects in specific areas of research selected by program officers. A stipulation of top-down research grants is that they must involve collaborations between at least three labs of different EU member countries, which is not always an easy requirement to fulfill.

Projects funded under these top-down initiatives can be very successful and support research that is otherwise neglected, such as work on rare diseases or diseases of developing countries. This class of projects deserves funding.

Yet innovation is—by definition—unpredictable, so focusing a large part of the funds on a limited number of research areas poses risks and is not the best way to encourage nonmainstream ideas. Top-down funding programs are harder for young, up-and-coming investigators to access, as research networks are largely built based on researchers' track records and established connections. Moreover, within the 'health' area, these grants cover almost exclusively translational projects.

Both top-down and bottom-up research initiatives are needed to ensure Europe's global competitiveness. But as the EU sets its priorities under the clouds of overall budget woes, it should favor researcher-originated projects over thematically defined grants if it wants to promote technological and scientific innovation more efficiently.

Several governments of EU member countries recently announced they will be cutting research budgets in the coming year. It is therefore foreseeable that a higher number of researchers will turn to EU funds to maintain their competitiveness.

Under these circumstances, the best way to guarantee that labs performing excellent science across Europe have equal opportunities to benefit from the funds available is through bottom-up funding strategies. This approach will promote competition, encourage creativity and benefit younger investigators, who can be in the best position to break new ground in science.