The current crisis serves as a reminder that we cannot take research and higher education for granted. This is certainly the case in parts of the world that have been held back by wars, civic strife, and the legacy of colonialism. A case in point is the Democratic Republic of the Congo (DRC), a country that is very rich in both human and natural resources but has been politically unstable for decades and is struggling to maintain the quality of its schools and universities. With a civil war raging in parts of the country, a crumbling infrastructure, and a widespread incidence of deadly diseases such as malaria and Ebola, it has become increasingly difficult to provide higher education and convince the educated to stay in the country. This is all the more frustrating as the DRC has the potential to thrive given its richness in mineral resources, favorable geography and climate, and, most importantly, the energy of its citizens.

More than 12 years ago, Gerhard Bringmann, a professor of chemistry at the University of Würzburg, and Virima Mudogo, a professor of chemistry at the University of Kinshasa, started an initiative that intends to reverse this trend. Convinced that science and education are the basis for peace and prosperity, they founded a nongovernmental organization, named Förderverein Uni Kinshasa e.V. (NGO for the Support of the University of Kinshasa, UNIKIN), that provides material support, encouragement, and personal connections to students all over the DRC. Its most visible activity is an excellence scholarship program, termed BEBUC, that is very popular and highly competitive. The idea for BEBUC grew out of a scientific collaboration on antimalarial alkaloids between Mudogo and Bringmann, which has been ongoing since 1993. This collaboration resulted in several publications, mainly on antimalarial and anticancer naphthylisoquinoline alkaloids such as those shown in Figure 1.1–6

BEBUC is, however, not limited to chemistry, but virtually covers the entire range of subjects taught at Congolese universities, with a particular focus on natural sciences, life sciences, and medicine. Since its inception, the program has grown at a remarkable pace and now supports nearly 200 students at 16 Congolese universities, 8 high schools, and 1 elementary school. The network spans almost the entire Democratic Republic of the Congo (Figure 2).

BEBUC is generously supported by the German foundation Else-Kröner-Fresenius-Stiftung, along with the smaller foundation Holger-Pöhlmann-Stiftung. A most remarkable and specific sustenance comes from many individual donors that care for the well-being and development of their assigned scholars. Such a BEBUC sponsor typically accompanies a student throughout his or her entire education. This provides an additional level of motivation for the students to get good grades and to remain in the program, while also nurturing a support network for when they are struggling in their academic or personal lives.

Chemists are used to the idea that their profession contributes to the improvement of the human condition. Yet, it is not always that golden bullet of a molecule that makes all the difference. Those who teach know that mentoring students can have more lasting impact on society than a “hot paper”, which can become a bit tepid after a few years. Providing students in a less fortunate corner of the world with a perspective for the future can be as important as leading teams of scientists at top-ranked universities.

We asked Gerhard Bringmann a few questions about the origin of BEBUC, its scope and limitations, and about the future of the program:

Gerd, how did you get to know the DRC and its chemists?

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field of tropical lianas producing structurally, biosynthetically, and pharmacologically active naphthylisoquinoline alkaloids, I heard about Prof. Mudogo, who had, previously, studied at the University of Wu ̈rzburg. We started our collaboration in 1993, which led to the discovery of fascinating new biaryl natural compounds with several stereogenic axes and centers (see Figure 1). But it was only in 2005 that I managed to organize my first trip to DRC and a mini-symposium in Kinshasa—and was immediately captured by the feeling that I should help this country, which, on the one hand, is so rich in natural minerals and biodiversity, but, on the other hand, so extremely poor, occupying lowest ranking positions, e.g., in the Human Development Index.

Which role did your chemistry collaborations play in getting BEBUC started? Our chemistry collaboration was the crystallization point for BEBUC. Our first four scholars, recruited in 2008, were, thus, from chemistry and pharmacy. To have Prof. Mudogo, who at that time was the Vice Rector of the University of Kinshasa, as my partner, was a most fortunate circumstance. He is an extremely reliable, sincere, and diplomatically wise person, without whom it would not have been possible to build up this worldwide unique scholarship program.

How strict are your selection and success criteria? Our selection and success criteria are very strict, but fair and transparent. We expect our scholars to have excellent marks and to be the best in their class, but we also demand social, organizational, and ethical skills. If these are not fulfilled, a scholar may have to leave the program, but, once having improved, he/she can knock at our door again.

Which fields are BEBUC students studying and at which level of education do you support them? In principle, the BEBUC scholarship program is open to all subjects taught at Congolese universities. But, due to the problematic medical care in the Congo, there is an emphasis on students of medicine, with different specializations urgently needed in the Congo, and related subjects, such as public health, dentistry, pharmacy, and chemistry, especially if the latter is involved in the search for new bioactive compounds from natural Congolese resources.

We support and mentor the young academics throughout the entire “academic pipeline” — from bachelor to master studies, Ph.D. studies and, in particular, during the critical phase when returning home after studies abroad. For their Ph.D. studies, we expect them to provide an external scholarship, so-to-say, as a proof of concept, but further support them by “book money” and finance training or language courses, and we help them prepare for their difficult return and support them in the tedious process of attaining a professorship back home. To recruit a higher number of female candidates, we also support young excellent Congolese from secondary schools and, in selected cases, even from primary schools for the early discovery of young talents. We are proud to have a ratio of over 35% girls and young women among the scholars and keep fighting for an even higher percentage.

What percentage of your sponsors are chemists? Many of the personal sponsors are from chemistry and closely related life sciences like pharmacy, biology, and medicine. The reason for this is that they learned about the BEBUC program in talks on my scientific work on Congolese plants, from which the scholarship program originated. Some of the sponsors are high-ranking persons like the President of the University of Würzburg, members of the Senate of our university, and the Lord Mayor of the City of Würzburg.

How many BEBUC awardees have returned to the DRC? Although our scholarship program started out only in

Figure 1. Complex, axially chiral, and bioactive alkaloids mostly resulting from the collaboration between Profs. Bringmann (Würzburg) and Mudogo (Kinshasa).
2008, we already have the first re-entry scholars and several postdoctoral fellows (presently two in Europe and one in South Africa), and even the first 10 “BEBUC professors”. This is due to the fact that the BEBUC scholarship “pipeline” can be entered not only during bachelor, but also during master or Ph.D. studies, and even after the return to the

Figure 2. Participants of the BEBUC program. (A) Dr. Blaise K. Lombe, a previous graduate student supported by BEBUC, with Gerhard Bringmann demonstrating a model of the naphthylisoquinoline alkaloid cyclombandakamine A1 (see also Figure 1). (B) The members of the UNIKIN Executive Committee in 2018. Left to right: Coco Mvumina (Kinshasa), Justin Monsenepwo (Würzburg), Karine Ndjoko (Lausanne and Lubumbashi), Gerhard Bringmann (Würzburg), Christine Wolf (Würzburg), Hypolite Muhindo, and Virima Mudogo (both Kinshasa). (C) Convincing the Evaluation Panel with a thrilling talk at the blackboard: Sarah Onyembe, a student from the secondary school Groupe Scolaire Mont Amba in Kinshasa. (D) Proudly presenting the typical blue BEBUC folder: The scholar Dorcas Ndya at the certificate ceremony in Mbuji-Mayi. (E) Strong women in BEBUC: The female scholars in Goma together with BEBUC General Manager Karine Ndjoko. Photos by Robert Emmerich, Jan Wendrich, Hypolite Mavoko, Vivi Maketa, and Patient Kubuya, used by permission.
Congo. And there are even the first BEBUC professors who have been supported all the way from their bachelor studies.

**How important are the personal interactions between the awardees and their personal sponsors? And with the Panel?** The regular personal interactions between the scholars and their individual sponsors are usually cordial, often leading to true friendships. It is heart-touching for the scholars to see that, for the first time in their lives, there is someone outside their family who is interested in their personal welfare and their career, and even gives money out of his/her private pocket. Equally interested in their personal welfare and their career, and their lives, there is someone outside their family who is of excellence (members of the Panel) — personal contact with each of them (and so are the other members of the Panel)— whenever they have to report about the results, whenever they need to ask for advice, be it for their study subject or for organizational mishaps and injustice that they have to suffer at the university, or when they fall ill. Actually, we have recently been able to support an excellent scholar who had a life-threatening disease, from which she was cured, returning to her studies and again achieving outstanding results. This is totally different from other scholarship organizations. And the scholars, in turn, adopt this way of taking care and responsibility for the younger scholars by mentoring them.

**What other qualities of BEBUC Scholars are important?** It is amazing how much our scholars incorporate principles of solidarity and fairness toward other students, of being sincere and honest, visionary, and democratic at the same time. Jointly, we have developed a democratic model of electing speakers at all involved institutions, who, in turn, form a Congo-wide Speakers’ Council (i.e., the scholars’ parliament!), which elects, among the speakers, a “Prime Speaker” and a “Vice Prime Speaker”. Democracy and ethics have become part of their lifestyle, even in this difficult environment. All external scholars (i.e., the advanced students presently studying abroad) are organized as an “External Virtual Institute”, currently comprising more than 70 scholars. This institution is likewise guided by a democratically elected External Speaker (assisted by several Vice Speakers), who is also part of the Speakers’ Council.

**What is the future of BEBUC? How large do you want it to be?** We have strived for a “steady-state plateau” of about 200 BEBUC scholars, which we have reached—to us, that seems to be the optimal number of scholars to help as many as possible to become excellent professors. We are approaching our goal to give the Congo a new generation of excellent professors, more and more organized by our African partners. This is also reflected in the high percentage of Africans in our NGO Panel.

Future steps will be the creation of centers of excellence, specialized in Congo-relevant fields, such as infectious diseases and other under-represented medicinal topics, but also aiming at bettering of the nutritional situation in the Congo and developing a human-compatible exploitation of the immense mineral treasures.

**Can the BEBUC model be adapted to other countries and societies?** We have always said that we launched this program in the Congo only exemplarily—as a model for further African countries and for other countries worldwide. There have already been several requests. The scholarship program will then of course have to be adapted to the specific economic, social, and cultural conditions of that particular country. I will be pleased to give information to interested colleagues from other countries and to advise them.

**How can chemistry develop further in the DRC? What are the particular strengths of chemistry in this country?** The Congo has a huge potential both in minerals and in biodiversity, and it has, potentially, more than enough energy from water and sun. With a new generation of young highly qualified professors returning, trained not only in natural products chemistry, and in pharmaceutical and medicinal chemistry, but also in geology, mineralogy, and engineering, we are convinced that we can give this country a new impulse for a prosperous future. The chemists who come back carry with them skills of analytical, synthetic, and medicinal chemistry—and the spirit of BEBUC!

**Finally, how important are open access journals that publish high quality research for countries like the DRC?** This is indeed a huge added value as compared to the previous situation. With the presence of scarcely equipped libraries in the Congo, and even after I have collected more than 40 tons of books and delivered them to the Congo, this would be a huge improvement.

**Further reading.** For further reading, see the following links:

Förderverein Uni Kinshasa – BEBUC: [http://www.foerderverein-uni-kinshasa.de/?lang=en](http://www.foerderverein-uni-kinshasa.de/?lang=en)

A recent article on BEBUC: Ndjoko Ioset, K.; Bringmann, G.; Next Generation Professors with BEBUC. *AfriSciTech*, 2018. [https://www.afriscitech.com/en/news/policy/439-next-generation-professors-with-bebuc](https://www.afriscitech.com/en/news/policy/439-next-generation-professors-with-bebuc)

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