ARRIGE has participated in a meeting held in Vienna January 8-9, 2020, organized by the Medical University of Vienna, with the support of the UNESCO Austrian Commission and the Center of Medical Research Lambaréné (CERMEL, Gabon): “Vector-Borne Diseases, Nature and Genome Editing: An Ethical Consultation”. This meeting is a continuation of the first one held in Vienna in 2016 “Fighting Malaria with CRISPR/Cas9: Ethical implications”, followed by the “Scoping Meeting on the Ethics of Vector-Borne Diseases” organized by WHO in Vienna on 2018.

During this January 2020 meeting, scientists, lawyers, philosophers and journalists from Europe and Africa discussed the main issues at stake, i.e. the scientific advancement of vector-borne disease control, and the social and ethical concerns raised by various technologies deployed. Vector-borne diseases represent one of the major burdens of humanity with more than 400,000 deaths each year from malaria, and many more from dengue, chikungunya, zika or yellow fever. A key question dominated these 2-day discussions: what has changed since the first meeting held in 2016? In terms of scientific improvement, the major step forward is the conclusive proof that gene-drive, one of the approaches discussed, is dramatically effective in laboratory experiments, although no progress was made in the search for drive reversal. Several field experiments have been also initiated using modified mosquitoes either after irradiation, Wolbachia infection or transgenesis, in various areas these past years (South America, Africa, the Caribbean) to control malaria, dengue or chikungunya. However, the results seem poor as the sterilized or genetically-modified insects were not significantly effective in a way that these diseases were in control. The other important unfortunate information provided is the recent appearance of new resistance to the insecticides used to impregnate bed-nets and still the lack of efficient anti-malaria vaccines. As in 2016, scientists urged to continue the funding of more classical research aimed at finding new classes of insecticides and drugs. Finally, all African participants agreed that their Continent should jump into the development of these technologies by providing local funding for projects led by African scientists, who eventually could become leaders in the field. This of course needs strong capacity building in terms of lab facilities but also to permit robust local regulatory and ethics oversight. Furthermore all the participants agreed that there is no magic bullet and gene-drive, when effective, will have to be combined with other approaches including education (drying dead water, developing a dry-day once a week…), fighting against comorbidities (HIV, tuberculosis,…), using new approaches to prevent drug resistance.

With regards to societal issues, no regulatory framework has yet been proposed at the European and international level. The moratorium on gene-drives called for by several NGOs in 2016 was not put into place. However, as was recalled during the meeting, on July 2018 a European Court of Justice ruling confirmed that gene-editing plants could be considered as genetically-modified organisms. This could push the European Commission and/or other state organizations to take action to propose a new regulatory framework that could impact the development of gene-drive as well. In 2017, the WHO working group started examining ethical issues associated with vector-borne diseases, and will soon release guidelines on the ethical consideration of various approaches to control these diseases, responsible each year for high morbidity and mortality mainly in poor resource settings. Also since 2016, the civil society in low and middle-income countries have dramatically developed together thanks to the rapid spread of social media, unfortunately also prompt to convey rumors and fake news. This definitively calls for better educational programs for people living in the areas of experimentations, and this may be achieved through proper training of local journalists.

ARRIGE co-organized the meeting and several members of our association participated, including three members of the Board and two members of the Scientific Committee, as well as two colleagues from Japan. In his presentation, H. Chneiweiss called for better governance and the essential need for real public engagement to efficiently fight against vector-borne disease. F. Hirsch highlighted the fact that ARRIGE may be the right organization to globally provide all stakeholders with scientific information allowing for fruitful debates and discussion.

Finally, all participants agreed for the need of a global approach integrating a systemic view, one that is inclusive of all stakeholders.