UNIVERSITY OF BERN MULTIDISCIPLINARY CENTER FOR INFECTIOUS DISEASES

THESPREAD A NEWSLETTER FROM THE MCID



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News from the Center

Dear readers,

January 2024 saw the third anniversary of the launch of the MCID, funded through the generous support of the Stiftung Vinetum. There is much to look back on as successful milestones and much to look forward to enthusiastically.

As The SPREAD showcases each issue the currently running MCID-funded projects, work is in preparation for the launch of the second project funding call in the second half of 2024. The MCID has thus far held two open events focused on MCID-funded activities and the next MCID annual event will take place on 4th July this year.

In January, Genomics for Health in Africa, an ARUA-The Guild Cluster of Research Excellence Co-Lead by the MCID, held its official kick-off workshop. Partners are now busy shaping strategies for two-way student / early career researcher exchanges, fundraising efforts and other exciting activities, including the launch of a webinar series on 11th March. If you would like to be kept up-to-date on any of the MCID / Genomics for Health in Africa activities above, see here: *Q*

We wish all readers of The SPREAD a healthy and rewarding 2024 and thank you for your continued interest.

Yours sincerely, Rebecca Limenitakis (MCID Managing Director) Anita Hochuli (MCID Teaching and Outreach Coordinator)





Integrating Science into Policy – Which Systems Work Best?

Article by: Dr. Johanna Hornung and Prof. Dr. Fritz Sager, KPM Center for Public Management (KPM)

A central challenge in combatting infectious diseases lies in integrating scientific knowledge into policymaking, so that decisions on public policies are informed by scientific insights^{1,2}. Public policy research is devoted to the analysis of policymaking processes, particularly the relevant actors who influence public policies and the structures within which they do so. In this regard, several questions arose during the COVID-19 pandemic: Which scientific policy advisory structures are best suited to ensure functioning science-policy interactions in public health crises? In what way do certain policy advisory systems lead to better outcomes? How should we prepare for the next public health crisis?



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Dr. Johanna Hornung

In our project, we compare different policy advisory systems across countries³. We analyze how different structures of science-policy relations played out in the pandemic to draw lessons for future public health crises. In doing so, we provide a systematic overview of policy advisory systems and scrutinize the dynamics that evolved during the pandemic by relying on document analyses, surveys, and expert interviews. This has produced the following key insights so far.

There is no one-size-fits-all structure of science-policy interactions.

Policy advisory systems vary, and so do political systems. What works in one country does not necessarily work in another, because the cultural and institutional factors are different. In the Swiss context that is shaped by direct democracy, consensus, and federalism, policy advisory systems are built differently than, e.g., in France, where decision-making is more centralized and based on hierarchical relations rather than negotiation. Therefore, when thinking about how to design a policy advisory system to ensure functioning science-policy relations, it is necessary to consider the context in which it is embedded.

In Germany, the Robert Koch Institute (RKI) as the responsible public agency took a major role in providing scientific policy advice directly to the government, but the Länder governments often deviated from the nationally formulated recommendations and decisions, especially as the pandemic was politicized in the runup of the federal election 2021. The insufficient fit of this advisory structure to the German federal system and multilevel governance structure resulted in a subnational fragmentation of scientific advice and at times uncoordinated responses to the pandemic where the integration of scientific advice was not apparent. In the UK, the emergency system of the Scientific Advisory Group for Emergencies (SAGE) "clicked into action" (quote from a SAGE member) and resembled the system of a strong separation of scientific advice was integrated into policymaking can be evaluated as more functioning in the UK than in Germany.

The linkage of systems to outcomes is not straightforward.

However, this comparison already indicates that there is no straightforward relationship between a functioning system of policy advice and the outcomes of crisis management. While the case fatality in Germany was 0.4 %,





it is five percentage points higher in the UK⁴. In Switzerland, the case fatality was even lower than in Germany, with 0.3 %, although the COVID-19 Science Task Force was created ad-hoc and outside the usual consensual structures of the Swiss political system. These numbers only serve to illustrate the complexity of linking advisory systems and the integration of scientific advice into public policymaking. It is imperative to acknowledge that multiple indicators (not just case fatality) must be considered to evaluate the outcomes of pandemics, and that science-policy interactions are one among many factors that influence such outcomes. One of these other factors is whether citizens follow the adopted measures, which according to our data is influenced by trust in scientists. Trust in scientists, in turn, is not only related to how citizens perceive the policy advisory system and the role of scientists in informing public policies. Furthermore, much depends on an adequate implementation of measures, which is independent of the policy advisory system in place.

How should we prepare for the next public health crisis?

We cannot rely on a perfect type of policy advisory system to effectively manage public health crises. Nevertheless, we can learn something about the integration of scientific advice into policymaking for the future.



Prof. Dr. Fritz Sager

Firstly, when designing the structures for science-policy interactions, they should fit the pre-existing political and administrative system to ensure a smooth functioning of science-policy relations. Is decision-making and implementation centralized or decentralized in subnational units? Are decisions taken hierarchically or through consensus, which suggests a greater need for debate in science-policy relations? The policy advisory system in place for crises should account for these structures.

Secondly, only because these structures work, they do not produce good outcomes by default⁵. Both the implementation of policy measures and the compliance with measures by citizens influence the outcomes of public health crisis management. Therefore, in times of crisis, we should pay attention not only to a functioning science-policy interaction, but also to maintaining the trust that citizens have in public policies. To conclude: instead of focusing merely on institutional preparedness for pandemics, we should place more emphasis on the pre-existing structures of political and policy advisory systems and also consider dynamics at the individual level, including perceptions of science-policy relations.

References

¹ Eichenberger, S., Varone, F., Sciarini, P., Stähli, R., & Proulx, J. (2023). When Do Decision Makers Listen (Less) to Experts? The Swiss Government's Implementation of Scientific Advice during the COVID-19 Crisis. Policy Studies Journal, 51(3), 587-605. <u>P</u>

² Schlaufer, C., & Hornung, J. (2022). Was kann evidenzbasierte Politik und was nicht? «décodage» – Blog der SAGW. 🔎

³ Hadorn, S., Sager, F., Mavrot, C., Malandrino, A., & Ege, J. (2022). Evidence-Based Policymaking in Times of Acute Crisis: Comparing the Use of Scientific Knowledge in Germany, Switzerland, and Italy. Politische Vierteljahresschrift, 63(2), 359–382. *Q*

⁴ Johns Hopkins University and Medicine, Coronavirus Resource Center 🔎

⁵ Hornung, J., & Sager, F. (2023). The non-use of evidence in the adoption of a sugar-sweetened beverage tax in OECD countries. European Journal of Public Health, 33(4), 659–664. *Q*

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Did someone say negligence?

Article by: Dr. Chantal Morel and Prof. Dr. Rudolf Blankart, KPM Center for Public Management (KPM) and sitem-insel

Resistance is making our current antibiotics less and less effective at treating infections. Some estimates suggest that the number of deaths associated with resistant bacterial infection is already 5 million deaths per year¹. There is a very clear urgency to get novel antibiotics to market, and there is an intense level of demand for them on the horizon. Yet why isn't the market producing these medicines?

Scientifically the production of antibiotics with sufficient novelty to bypass existing resistance mechanisms (and avoid cross-resistance) is often said to have reached greater levels of complexity, with all of the "low-hanging fruit" having already been picked. While this is likely true, it also seems reasonable that the major advances in our understanding of humans and pathogens, for example through breakthroughs in the various omics and our new bounding ability to explore relationships using artificial intelligence, should help discover novel approaches to treatment.



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Dr. Chantal Morel

The problem seems to lie mainly with the market for antibiotics, which is plagued by numerous weaknesses. Perhaps most important amongst them is the fact that we are used to paying very little for medicines due to generic sales, and due to the clinical trial requirements that conclude a new drug is "as good as" and older one. Lacking evidence to suggest superiority of new antibiotics over older ones^A makes it difficult to negotiate the high prices needed to recoup R&D costs and still be profitable^B. Indeed prices for pharmaceuticals are not set by the free market, but rather are driven by direct or indirect negotiation between the payor (generally a handful of large payors or a single public payor, both of whom possess considerable "monopsonic" or single purchaser leverage) and the manufacturer. Combined with stewardship practices that severely dampen demand for new antibiotics, pharmaceutical companies are left with the message that if they do bring new antibiotics to market they are unlikely to make a good return on their investment. Meanwhile, high or even very high returns can be expected from treatments for cancer or chronic conditions -- a message that is reinforced by the price signal made by payors and governments in how they make their reimbursement decisions^c. So why bother investing in new antibiotics?

^c Reimbursement works largely as a price-setting mechanism across the market based on the assumption that prescribers and/or patients will be sufficiently price sensitive to not prescribe/purchase products priced above what will be reimbursed. In some cases reimbursement is limited to a "positive list" of products deemed to be sufficiently good value-for-money. The latter is generally determined using comparative analyses such as Health Technology Assessments (HTA), the design of which has major bearing on outcome. In the case of HTA for antibiotics, methods tend to be ill-suited and too short-term in perspective, failing to capture important attributes such as novelty and the insurance value that antibiotics have for treatment of infection in future.



^APhase III antibiotic trials are expected to undertake non-inferiority trials, which simply demonstrate that the new product is as efficacious as the standard treatment. Superiority trials are in most cases deemed inappropriate due to the challenges in enrolling large numbers of patients with resistant infection and the physician's duty to provide an effective treatment to the type of infection she/he is presented with (e.g., it is not ethically possible to enrol a patient with a suspected resistant infection to a blinded study since there is a chance that the patient may end up in the control arm where only the standard drug is provided). See considerations and comments by Rex for further explanations. *Q*

^B For publicly-listed pharmaceutical companies (i.e. most of the large companies) being sufficiently profitable is determined by shareholders, rather than an objective threshold.



Seeing the weaknesses in the antibiotics market and the limited number of truly novel treatments being approved, one could expect that public health authorities would do more to motivate antibiotic production with the various tools that exist to do so. A few governments and philanthropic donors have responded with vital "push" funding (subsidies) to support early stage antibiotic candidates, primarily in the stages from "hit to lead". The main engine for this support is the CARB-X initiative, which is run out of Boston University in the United States but provides critical funding (so far approximately 400 million USD) to groups internationally^D. This funding is intended to help scientists (generally small companies) try to take ideas forward to the point when larger companies and investors will take interest and support the project through to market approval. However, this dependence on natural "pick-up" by investors has unfortunately proven to be illusory. Amongst even the seemingly most promising of CARB-X-funded antibiotic candidates, only a tiny number have been picked up for further trials and investment. Simply put, investors have no interest – even where public money has largely de-risked investments.



Prof. Dr. Rudolf Blankart

Faced with cries of urgency from the clinical community, leaders of the big economies have considered offering pull incentives–large scale rewards (e.g. 750 million - 3 billion USD) granted upon approval of novel treatments. In Europe the dialogue on this began in 2009 under the Swedish EU Presidency², and a few pull models have been considered since³. In Switzerland the Round Table on Antibiotics has proposed an incentive model to suit the Swiss healthcare and procurement systems⁴. However, to-date nothing has materialized into actionable policy. In the United States – the market that most companies look to in making their investment decisions – the issue has passed several times before Congress and resulted in the proposed Pasteur Act. However, despite repeated introductions, the Act has thus far stagnated, and it is unclear if it will ever be adopted into law⁵.

Seeing the slow response of governments, some large pharmaceutical companies have tried to help maintain some activity in the pipeline by offering 2 billion USD in dilutive equity purchases to support trials. While arguably helpful to some extent, the amount that can be offered to any one antibiotic candidate is relatively small compared to the very large sums needed to bring a new antibiotic through clinical trials – which can surpass this entire amount for just a single antibiotic⁶.

Our ability to treat bacterial infection in the years to come is very much at stake. Even major investments made today will take 12-15 to bear fruits. The lack of public health planning on antibiotics is extremely worrying, and arguably even negligent. It is high time to move beyond volume-based pricing and to serious pull incentives. In Switzerland this is likely to cost 2-6 million CHF per year per novel treatment. This is a considerable amount, yet it pales in comparison to the losses we can expect from an outbreak of difficult-to-treat infection -- the magnitudes of which we were briefly exposed to with the Covid-19 pandemic.

References

¹Antimicrobial Resistance Collaborators (2022). Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *P* ²Mossialos, E., Morel, C.M., Edwards, S.E., et al. (2010). Policies and Incentives for Promoting Innovation in Antibiotic Research. *P*

⁶Wouters OJ, McKee M, Luyten J. Estimated Research and Development Investment Needed to Bring a New Medicine to Market, 2009-2018. JAMA. 2020 Mar 3. <u>P</u>. Errata: <u>P</u>, <u>P</u>



^D Swiss companies are amongst the top recipients of CARB-X funding. Switzerland does not as yet contribute to CARB-X. *P*

³EU 2023. 🔎

⁴ Polek, B., Fürst, W., Bachmann, V. & Blankart, C.R. (2024). Effective antibiotics for the Swiss health care system: Today and in the future. Swiss Round Table on Antibiotics Publishing. Bern (in press).

⁵ US Congress 2022. 🔎



Fighting antibiotic resistance: Generation of protective crossreactive monoclonal antibodies to *Klebsiella pneumoniae*

Article by: Prof. Dr. Tim Rollenske and Sophie Burkhalter, Department of Visceral Surgery and Medicine, Bern University Hospital, University of Bern and Institute of Molecular Medicine and Experimental Immunology (IMMEI), University of Bonn, Germany

The rise in antibiotic resistance is often referred to as "silent pandemic". One contributor to this silent pandemic is the gram-negative encapsulated bacterium *Klebsiella pneumoniae* (Kp). As an opportunistic pathogen it is a leading cause of nosocomial (hospital-acquired) bacterial infection and linked to an increasing frequency of multidrug-resistant Kp bacterial isolates found in hospitals worldwide as well as pan-resistant Kp outbreaks¹⁻⁴. A promising approach to circumvent antibiotic resistance is monoclonal antibody (mAb) therapy which could be used as pre-emptive therapy or treatment-option.



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Klebsiella pneumoniae infections may be treated with antibodies

For an effective passive immunization strategy, a monoclonal antibody should be cross-reactive, targeting at the same time multiple serotypes (sub-groups within a species that vary in their surface composition). Kp is a potential target for cross-reactive mAb therapy as it has a limited set of O-serotypes with structural similarities. O-serotyping is a classification based on different so-called O-antigens which are part of lipopolysaccharides found on the surface of gram-negative bacteria. The four Kp O-serotypes O1-O3 and O5 and their variants account for about 75% of clinically relevant Kp isolates⁵. An efficient way to target these O-serotypes with antibodies would be to identify cross-reactive antibodies: antibodies which specifically bind to shared binding sites on the bacterial surface (epitopes) that can be found on different bacterial strains. Antibodies that are cross-reactive against mannan-based O-serotypes O3, O5 and their variants have already been described in humans and shown to be protective in bacteraemia mouse models⁶.



Figure 1: Defined bi-colonization in germ-free animals can be used to generate cross-reactive intestinal secretory IgA. Reactivity (+) or no reactivity (-) of intestinal SIgA to O1-, O2+ or O2- bacteria at 3, 10 and 26 weeks following bicolonization with O1-/O2+ bacteria.

However, to date, no antibodies have been found with cross-reactivity to galactan-based O1-, O1+, O2- and O2+ O-serotype variants, the most prevalent serotypes in nosocomial infections. In this MCID career development grant project we aim to generate protective cross-reactive antibodies targeting galactan-based strains and their variants. Such antibodies may be used as pre-emptive therapy or treatment option in multidrug- and pan-resistant Kp infections and as diagnostic tool for the O-serotyping of Kp isolates.

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Generating cross-reactive antibodies using germ-free mice

To generate cross-reactive antibodies, we use gnotobiotic mouse models: germ-free mice colonized with defined bacterial species or model gut microbiota. In our case the mice are bi-colonized with a combination of two Kp strains, one O1 variant and one O2 variant. To determine the induction of cross-reactive antibodies in bi-colonized mice we tested binding specificities of intestinal secretory IgA (SIgA) antibodies at different timepoints after colonization using binding assays such as Flow cytometry- and ELISA. We found that in O1/O2 bi-colonized mice, both strains used for colonization are targeted by intestinal SIgA (Figure 1). Binding to O2-, an O2 variant that the mice were not colonized with, emerged in bi-colonized mice 26 weeks after colonization (Figure 1).



Figure 2: Biased Immunoglobulin gene repertoire in bi-colonized mice. Percentage of variable Heavy (VH) gene-segment usage in germ-free (GF; purple) and 01/02 3 weeks bi-colonized mice (0102; red). Gene segments showing significantly different usage are indicated in orange. Purple asterisks indicate gene segments enriched in germ-free mice, red asterisks indicate gene segments enriched in bi-colonized mice. Preliminary data.

Some bi-colonized mice showed binding to all three variants indicating the presence of potential cross-reactive antibodies in intestinal secretory IgA fractions in a subgroup of animals. To identify cross-reactive monoclonal antibodies from these mice, we performed single cell RNA sequencing on IgA-producing effector B cells isolated from the lamina propria, a layer in the small intestine. These B cells expressed a diverse set of antibody genes when compared to germ-free control animals, with some genes preferentially found in bi-colonized animals (Figure 2).

To prove that the identified antibodies show cross-reactive binding properties we are currently producing large panels of monoclonal IgA antibodies from these mice to test their cross-reactive binding properties *in vitro*. Selected cross-reactive candidate monoclonal antibodies will be tested for their protective capacities in *Klebsiella pneumoniae* infection mouse models *in vivo* to identify potent protective antibodies. In summary, defined intestinal bacterial colonization of germfree mice can be used to select and generate cross-reactive antibody specificities which may allow isolation of cross-reactive monoclonal antibodies contributing to the fight against antibiotic resistance.



Sophie Burkhalter, PhD student

References

¹ Effah CY, Sun T, Liu S, Wu Y. Klebsiella pneumoniae: An increasing threat to public health. Ann Clin Microbiol Antimicrob. 2020;19(1):1-9. 🔎

 2 Farhadi, M., Ahanjan, M., Goli, H.R. et al. High frequency of multidrug-resistant (MDR) Klebsiella pneumoniae harboring several β -lactamase and integron genes collected from several hospitals in the north of Iran. Ann Clin Microbiol Antimicrob 20, 70 (2021). 2

³Lin Z, Yu J, Liu S, Zhu M. Prevalence and antibiotic resistance of Klebsiella pneumoniae in a tertiary hospital in Hangzhou. Journal of International Medical Research. 2006;50(2):1-10. *Q*

⁴Navon-Venezia S, Kondratyeva K, Carattoli A. Klebsiella pneumoniae: a major worldwide source and shuttle for antibiotic resistance. FEMS Microbiol Rev. 2017;013:252-275. *Q*

⁵ Hansen DS, Mestre F, Sebastia´S, et al. Klebsiella pneumoniae Lipopolysaccharide O Typing: Revision of Prototype Strains and O-Group Distribution among Clinical Isolates from Different Sources and Countries. J Clin Microbiol. 1999;37(1):56-62. 2

⁶Rollenske T, Szijarto V, Lukasiewicz J, et al. Cross-specificity of protective human antibodies against Klebsiella pneumoniae LPS O-antigen. Nat Immunol. 2018;19(6):617-624. *Q*

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BRIGHT AND EARLY



Bright and early: meet two MCID early career researchers

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Interview with:

Dr. Jessica Laine Carmeli, Institute of Social and Preventive Medicine (ISPM) and Dr. Emilie Seydoux, Department for Biomedical Research (DBMR), recipients of MCID Early Career Researcher Grants for Women

Can you describe briefly your MCID-funded project and what you aim to achieve?

Jessica: Despite intentions to breastfeed, and the fact that pregnant women and birthing persons are generally aware of the benefits of breastfeeding they experience several barriers resulting in many who do not meet their breastfeeding goals. Globally, including in Switzerland, breastfeeding rates are subpar. During pandemics and infectious disease outbreaks perinatal health and care can be greatly impacted, including breastfeeding (i.e., initiation and sustaining). Preliminary studies suggest a negative impact of COVID-19 on pregnancy and breastfeeding infectious disease pandemics, and to derive actions (e.g., potential interventions) that could aid in overcoming these barriers. I hypothesize that barriers to breastfeeding exist at multiple levels and are not solely rooted in intrapersonal aspects of knowledge deficits or decision-making but that higher levels (e.g., political/structural) play a more central role, especially during infectious disease outbreaks.

Emilie: Current influenza vaccines often do not provide strong and protective immune responses in vulnerable populations. Our project aims to improve vaccination strategies by including adjuvants, substances that trigger the first line of defense of the immune response (so-called innate immunity), which in turn boost and shape the pathogen-specific immunity. Our adjuvant candidate is bacterial lysates, which are known to induce protective immune responses following airway infections of viral or bacterial origin, through the probable unspecific activation of innate pathways. In addition, we aim to assess the potential benefits of intranasal and pulmonary delivery. Indeed, intranasal vaccination may induce local immunity where initial infection occurs, and so be more appropriate than intramuscular vaccination.



Dr. Emilie Seydoux

How does your project contribute to preparedness for infectious disease threats?

Emilie: Influenza viruses can infect up to 20% of the world's human population during the winter months. This results in a significant burden, with up to 650'000 people dying of respiratory diseases linked to seasonal flu each year. Influenza also remains one of the most likely virus to cause a pandemic. Efforts are therefore needed to manage the impact of influenza, by reducing seasonal influenza-related morbidity and mortality, but also to prepare for the next pandemic. Moreover, knowing about the adjuvant potential of bacterial lysates could be another useful tool against other infectious diseases available in the vaccine box.

Jessica: By assessing barriers and facilitators to breastfeeding at multiple levels and potential approaches to overcome them we can develop tangible solutions to reduce the impacts of infectious disease threats on breastfeeding rates. For example, there are consequences of infectious disease management tactics that must be considered holistically. Impacts from separating mothers and infants can be greater than the potential decreased risks of mother-to-infant transmission of a disease, including risks to breastfeeding initiation, maternal mental and physical health, and mother-infant bonding. Additionally, aspects such as lockdowns and public health precautions implemented to mitigate the spread of infections can result in many negative consequences for breast-

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feeding (e.g., lack of in person support or increased birth trauma). By understanding how breastfeeding was facilitated and challenged during the COVID-19 pandemic, findings serve as an opportunity to strengthen breastfee ding support (e.g., augment in-person care with virtual support), increasing preparedness for infectious disease threats. Ultimately, looking at breastfeeding through the lens of the COVID-19 pandemic can help to modify our existing methods to support breastfeeding families which may be challenged and subpar under normal (nonpandemic) conditions and exacerbated in events of future infectious disease outbreaks.





Dr. Jessica Laine Carmeli

Jessica: I have always liked complex questions and to take a holistic approach in answering them. My education and training led me through an interdisciplinary path in biology, women's studies, toxicology and ultimately in perinatal and environmental epidemiology. The research I undertake in perinatal health requires multidisciplinary knowledge and a broader lens than what seems to be on the surface. For example, in looking at breastfeeding barriers we must also look closely at the birth environment, as the initial aspects of breastfeeding at birth are strong predictors of breastfeeding success. For example, aspects such as in creased medicalization of birth and birth trauma can greatly impact breastfeeding initiation and duration, which are unfortunately increasing in Switzerland. Birth and

postnatal health are often viewed often through a medical lens, but they are highly influenced by our socialization and thus many perspectives must be taken, including a medical and midwifery, physiological, evolutionary, and feminist lens, among others- not just that of traditional medicine and epidemiology. This is so exciting to work on such huge and complex problems that ultimately affects each of us, as every human life begins with gestation and birth.

Emilie: In a multidisciplinary project, each collaborator comes to the table with his own expertise, but also his own personality, background and opinions. I find it very energizing to be challenged to other ideas and perspectives. Moreover, I have always been eager to learn new things. Working with people with different mindsets also contribute to my ideal of knowing as much as possible.

How has MCID early career researcher funding helped you advance in your academic career?

Emilie: I was very proud to receive MCID early career researcher funding, not only because it was the first grant I was receiving on my very own, but also because the MCID mission of preparing for and managing infectious risks really aligned with my scientific goals. Furthermore, as a mother of two young children, it is not always easy to forge my independent scientific path and balance family life and work as an early career researcher. Being funded by the MCID gave me great confidence that I, too, could do it! Read Emilie's bio: *Q*

Jessica: It is my career and life mission to improve woman, infant, and child health, particularly by focusing on perinatal and early life periods and to address and overcome systematic drivers of inequities and oppression in health. The aims of this MCID project are directly in line with this mission and receiving this funding allows me to conduct research that will help to improve the lives of women and children (e.g., improving breastfeeding rates). On a personal level this grant gives me the opportunity to initiate a study that I am passionate about and see if this is what I wish to continue in the field of academia or to take a different road. After I became a mother, my research philosophies and approaches changed. Birth and motherhood are transformative life events, and this transformation must be better supported by society and must be better represented in academic research. As for advancing my academic career, I am at a moment where I am deciding what direction my career will take. I greatly enjoy research, but my aim to have a more direct impact on the lives of women and to become a more prominent influence for initiating change in the birthing world and culture may take me out of the academic system. Read Jessica's bio: *Q*







News

Biosafety Center @ IFIK appointed as WHO Collaborating Center

The Biosafety Center at the IFIK, headed by MCID Member Kathrin Summermatter, has been appointed as a WHO Collaborating Center for Biosafety and Biosecurity *Q*

RSTMH Early Career Grants: funding opportunity for early career researchers on the topic of tropical medicine The Royal Society of Tropical Medicine and Hygiene has launched a 2024 Early Career Grants Programme call. Successful MCID-associated applicants with Africa-linked research projects may be considered for MCID top-up funding support *P*

Events

MCID annual event 2024: 4th July

The MCID annual event 2024 will be held in Bern on 4th July, will be open to all and will feature presentation of MCID-funded research, opportunities for networking and a keynote address. Sign up here to receive updates: *Q*

Launch of a CoRE- Genomics for Health in Africa webinar series

Cluster of Research Excellence, Genomics for Health in Africa, will launch its webinar series on 11th March. Each webinar will feature a PI and young investigator talk and recordings will be available post-event. Register here to receive updates: *Q*

MCID seminar series

Visit the MCID website to stay up-to-date with the MCID seminar programme. MCID seminars are held in-person and are aimed at a multi-disciplinary audience *Q*

Highlighted publications

Bettina Zimmermann on the information behaviour perceptions of Swiss residents during the Covid-19 pandemic

MCID member, Bettina Zimmermann, analysed information behaviour during the Covid-19 pandemic, assessing factors including motivations for gaining information and consequences of information overload and conspiracy theories *Q*

Saskia Keller on emerging trypanosomiasis in alpine swift

Saskia Keller, MCID Epidemiology cluster member, and colleagues, identify *Trypanosoma* parasites, causal agent of trypanosomiasis, in Alpine swifts in Switzerland, following unexpected deaths in nesting birds *Q*

Jenna Kelly and Volker Thiel on screening for inhibitors of feline infectious peritonitis virus, a lethal cat coronavirus

MCID Microbiology cluster members Jenna Kelly and Volker Thiel, and colleagues, have developed an *in vitro* screen for testing of anti-feline infectious peritonitis virus (FIPV) compounds and evaluation of drug resistance in FIPV mutants *Q*

Julien Riou on excessive mortality in Switzerland during the Covid-19 pandemic

MCID Member, Julien Riou, and colleagues, investigated excessive mortality in Switzerland in 2020 at the municipal level, identifying higher relative excess in some areas than others and links to socioeconomic position *Q*

Jörg Jores on detection of zoonotic Leptospira bacteria in wild-carnivores

MCID Microbiology Cluster Co-Chair, Jörg Jores, and collaborators, screened wild carnivores in North-Eastern Germany for the presence of Leptospira, identifying these zoonotic bacteria in foxes, racoons, badgers, racoon dogs and pine martens *P*

Evangelos Karousis on coronavirus host cell take over

MCID member, Evangelos Karousis, and colleagues review the shut-down of host cell translation and suppression of host immune responses by coronaviruses, putting this in the context of mechanisms used by other viruses *Q*

Ana Maria Vicedo-Cabrera on the effect of population aging on heat-related mortality linked to global warming

MCID Epidemiology cluster member, and collaborators, investigate the consequence of the aging population on heat- and cold-related excessive mortality at different predicted levels of global warming *P*





Introducing Network Biological Risk: a 'One Health' platform for biological risk management in Switzerland

Article by: Dr. Franziska Oeschger

Current landscape

Switzerland has a unique concentration of institutions with expertise and infrastructure for detecting and addressing biological risks and infectious diseases with epi- and pandemic potential. However, these institutions are currently not cohesively connected, do not have a common point of contact and are not very visible to decision-makers and the public. This raises concerns that they may not be sufficiently coordinated and therefore not optimally used in critical moments.

Establishment and organization of the Network Biological Risk

In response to this challenge, the Network Biological Risk was founded as an association in early 2023 to consolidate and optimize existing capacities in the field of biological risk management. Its current members include public institutions, private companies, non-profit organizations and governmental bodies, spanning research, diagnostics, vaccine and therapeutics development, biosafety and human and animal healthcare. The University of Bern is a founding member and currently holds the presidency with Prof. Stephen Leib, Director of the Institute for Infectious Diseases (ifik).

Goals and prospects

The overarching goal of the Network Biological Risk is to establish and operate an efficient 'One Health' institution of national significance with global outreach, dedicated to detecting, preventing, and managing biological events and infectious diseases with epidemic and pandemic potential. Adopting a 'One Health' approach that underscores the interconnectedness of human, animal, and environmental health, it strengthes synergies, fills existing gaps, and fosters knowledge exchange. Amongst others, the network will explore pathways to provide durable technological platforms for detection (e.g., diagnostics) and prevention (e.g., vaccine development and production). Regular events such as an annual public symposium will provide opportunities for sharing experience and building knowledge.



The network is characterized by the fact that a wide range of institutions - public research organizations, private companies, governmental bodies and non-profit organizations - have joined forces.

The network is continuously expanding and is open and interested in further collaborations and discussions with public and private institutions in the field of biological risks.

We are looking forward to hearing from you:

Network Biological Risk

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Symposium on the revision of the Swiss Epidemics Act



The Swiss Epidemics Act, which regulates the protection of humans against communicable diseases and provides for necessary measures, is currently being revised to incorporate the experience gained to date with the implementation of the law and the Covid-19 epidemic.

On 16 January 2024, the **MCID Ethics and Policy Lab** 2 held a symposium on the current revision of the Epidemics Act. The event started with a presentation of the draft law and the revision process by Kathrin Agosti from the Federal Office of Public Health. Christian Althaus (MCID and ISPM) then presented research and reflections on the epidemiological criteria for the change between a normal, special and extraordinary epidemic situation. Caroline Schlaufer (MCID and KPM Center for Public Management) presented research on the role of scientists in the pandemic. In a last presentation, different comments were presented from the scientific community on the draft law. The presentations were followed by a panel discussion with Philipp Jent (MCID and Inselspital), Kathrin Huber (Conference of Cantonal Health Ministers), Hans C. Matter (Federal Office of Public Health) and Ursula Zybach (Member of the National Council). See here to access presentation slides *Q*







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