

2022 Impact Report by PAR Foundation

Taking Action to Preserve Modern Healthcare for
Generations to Come.

A Word From Our Chairman



When we founded PAR Foundation and drafted our strategic plan, our vision was to lead the fight against antimicrobial resistance (AMR). Ever since we started, we have supported impactful projects in both developing and developed countries.

I have now completed my first year as Chairman of the Board. I am proud to lead a foundation that is passionate about tackling one of today's

most critical public health challenges. AMR threatens global health, potentially rendering our most effective antibiotics useless and affecting society at large. Drug-resistant bacteria and viruses already now make routine medical procedures riskier.

In response, our organization has been working tirelessly to develop innovative partnerships and connect influencers across the industry. Our focus is

on AMR prevention and safeguarding antibiotics through research and education. We aim to raise awareness among policymakers, healthcare professionals, and the public through our grantees to prevent antibiotic resistance to spread.

Looking ahead, I'm confident that our organization will continue to lead the fight against AMR by funding projects that bridge the gap between education and

research. We're committed to collaborating with others in the field and leveraging the latest scientific and technological advancements to address this pressing challenge.

We welcome collaborations and support from organizations and individuals dedicated to preventing

AMR. Our secretariat is always ready to explore partnership opportunities. Thank you for your continued support.

Ewa Björling,
Chairman, PAR Foundation.

About

PAR Foundation is a Swedish foundation formally registered in 2018 as Stiftelsen för förebyggande av antibiotikaresistens (The Foundation to Prevent Antibiotic Resistance). The organization is governed by an immutable section in its statutes which state that it shall fund research, education and information activities in Sweden and abroad with the purpose of reducing antibiotic resistance. Supporting research and other

projects aiming at the prevention of the spread of antibiotic resistance is extremely important. However, it is equally important to see to it that the support is meaningful and effective. We therefore spend quite some time and resources evaluating the impact of the projects we are supporting. This will help us to direct our future funding in the most efficient way helping to reduce the risk of this very serious problem.

Board of Directors



Lars Engstrand

Professor, Dept. of Microbiology, Tumour and Cell Biology (MTC), and Director of Centre for Translational Microbiome Research at Karolinska Institutet.



Ewa Björling

Member of the Swedish Parliament and Minister for Trade 2007- 2014, Minister for Nordic Cooperation 2010-2014. Doctor of Medicine and Associate Professor at Karolinska Institutet.



Stig Wall

Professor Emeritus of Epidemiology and Health Care Research at Umeå University with experience of collaborative research work in Africa and Asia and as advisor to WHO.



Peter Rothschild

Chairman and founder of BioGaia, CEO of BioGaia 1996-2016.



Anna Nordlander

Assistant Senior Physician at the Department of Infectious Diseases at Karolinska University Hospital.



Marika Isberg

LLM and BSc in Economics. Executive Vice President and General Counsel for Permobil AB.

PAR Foundation is funded by philanthropic donations from **BioGaia**, a Swedish healthcare company that has been a world-leader in probiotic dietary supplements for more than 30 years.

BioGaia®
Probiotics grounded in evolution
Driven by science

Our Work

Antimicrobial Resistance (AMR) is a growing problem that poses a serious threat to mankind. The overuse and misuse of antimicrobial drugs, such as antibiotics, is the primary cause of AMR. When these drugs are used frequently or incorrectly, microorganisms can evolve to develop resistance to them, making them less effective. If left unchecked, AMR can lead to a situation where common infections become untreatable, resulting in prolonged illness, disability, and even death.

To address AMR, it is important to implement strategies that prevent the spread of resistant infection such as encouraging good hygiene practices, reducing unnecessary use

of antibiotics, and improving infection prevention and control measures in healthcare settings. In addition, developing new antimicrobial drugs and alternatives to antibiotics, as well as promoting the responsible use of existing drugs, can help to slow down the development of AMR and ensure that effective treatments are available for future generations. We have chosen to focus on a sliver of these multiple actions to take part in the fight against AMR.

PAR Foundation believes its strength to be in supporting research and educative initiatives to drive global change in the area of prevention of antibiotic resistance.

Our Strategy: Supporting Education and Research Projects

Our Vision

“Our aim is to help eradicate spread of antibiotic resistance.”

We will achieve our vision by using our strength in the most impactful way and support teams that research and educate health professionals about prevention of antibiotic resistance.

We believe our joint actions will educate key opinion leaders, support the general health sector, engage the next generation of researchers, and ultimately influence politicians to provide more resources, acknowledgment and focus to the academics working on methods to achieve the goal.



Taking Advantage of Learnings from the Pandemic

The COVID-19 pandemic has had a significant impact on the development of antimicrobial resistance (AMR). One of the main concerns is that the pandemic has led to an increase in the use of antibiotics to treat bacterial co-infections and to prevent secondary bacterial infections in COVID-19 patients.

While antibiotics can be effective in treating bacterial co-infections or secondary infections, the overuse of antibiotics can lead to the development of antimicrobial resistance. This can be particularly problematic during a pandemic, where the number of patients receiving antibiotics can increase rapidly. In addition, the pandemic has also disrupted routine healthcare services, which can make it difficult to implement infection prevention

and control measures that are important for preventing the spread of antimicrobial-resistant infections.

However, the COVID-19 pandemic has also raised awareness about the importance of preventing antimicrobial resistance and the need to use antibiotics responsibly. The pandemic has highlighted the importance of investing in research and development of new treatments and vaccines, which can help to reduce the need for antibiotics and decrease the risk of developing antimicrobial resistance. We aim to be part of this new wave of interest in the topic and believe we have a role to play in helping to spread awareness and increase knowledge around preventive actions to preserve antibiotics for today and future needs.

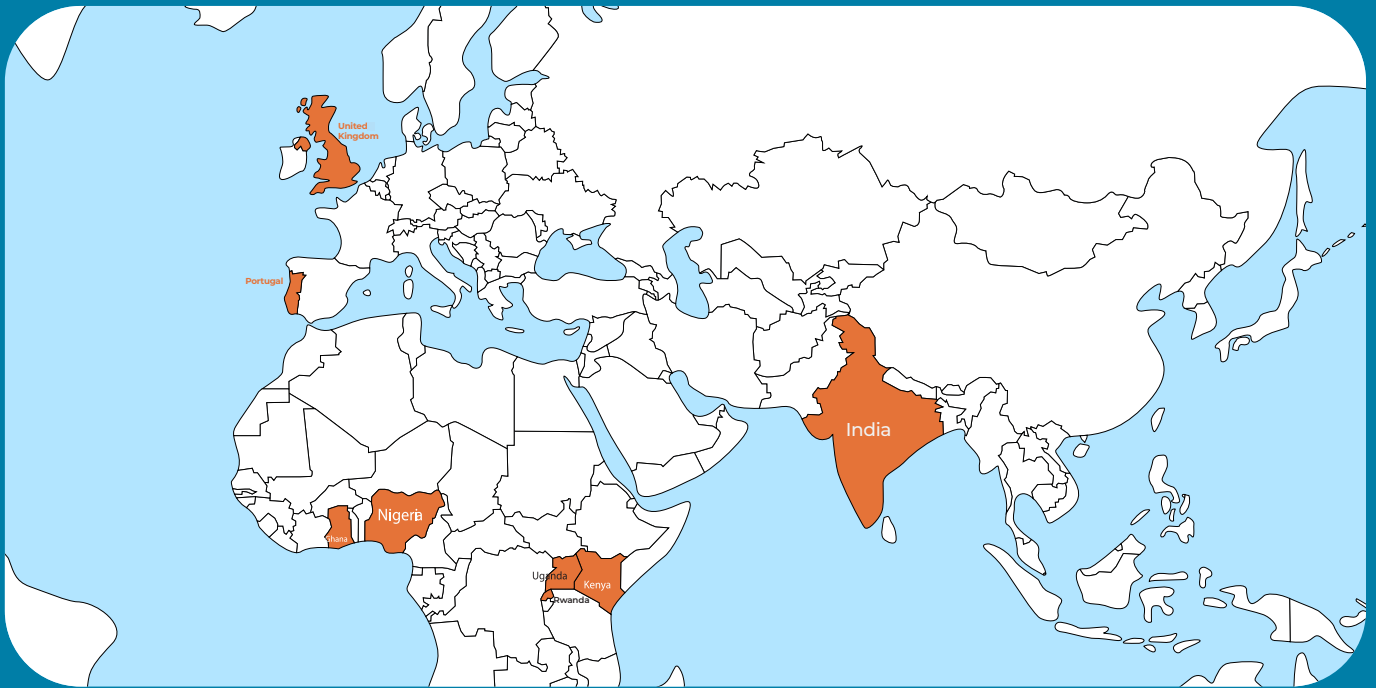
Our 2022 in Figures

10,000+

Beneficiaries impacted through funded projects

1,000+

Active Newsletter Subscribers



Active Projects 2022: Nigeria, Kenya, Uganda, India, Ghana, Rwanda, Portugal and UK.

8

Projects

12

Seminars Held

420+

Webinar participants

A group of four diverse people (two men and two women) are gathered around a laptop, looking at the screen. The image is overlaid with a dark blue tint. The text "Our Work" is centered in white.

Our Work

Preserving Antibiotics for Generations to Come

AMR, or Antimicrobial Resistance, is a growing problem that poses a serious threat to mankind. The overuse and misuse of antimicrobial drugs, such as antibiotics, is the primary cause of AMR. When these drugs are used frequently or incorrectly, microorganisms can evolve to develop resistance to them, making them less effective. If left unchecked, AMR can lead to a situation where common infections become untreatable, resulting in prolonged illness, disability, and even death.

- **World Health Organization (WHO):** [Antimicrobial resistance and COVID-19](#)
- **Centers for Disease Control and Prevention (CDC):** [Antibiotic Use in the United States and the Impact of COVID-19](#)
- **The Lancet Infectious Diseases:** [Antimicrobial resistance and COVID-19: intersections and implications](#)
- **Journal of Antimicrobial Chemotherapy:** [Antibiotic stewardship during COVID-19](#)

To address AMR, it is important to implement strategies that prevent the spread of resistant infections. Easy wins are practicing good hygiene, reducing unnecessary use of antibiotics, and improving infection prevention and control measures in healthcare settings. In addition, developing new antimicrobial drugs and alternatives to antibiotics, as well as promoting the responsible use of existing drugs, can help to slow down the development of AMR and ensure that effective treatments are available for future generations. We have chosen to focus on a sliver of these multiple actions to take part in the fight against AMR.

PAR Foundation believes it's strength to be in supporting research and educative initiatives to drive global change in the area of prevention of antibiotic resistance.

Are we Creating Impact?



Antibiotic Consumption

Monitoring the use of antibiotics in healthcare settings can provide insights into trends in antibiotic use and help identify opportunities for reducing unnecessary antibiotic use. Reducing the overall consumption of antibiotics has been shown to be an effective strategy for preventing the development and spread of antibiotic resistance.



Infection Prevention and Control

Implementing infection prevention and control measures, such as hand hygiene, environmental cleaning, and use of personal protective equipment, can help prevent the transmission of antibiotic-resistant bacteria in healthcare settings. The effectiveness of these interventions can be measured by tracking levels of awareness and increased knowledge of the effects prevention can result in.

Are we Creating Impact?



Surveillance of AMR Bacteria

Surveillance programs can track changes in the prevalence of antibiotic-resistant bacteria over time and identify emerging trends in antibiotic resistance. This can help guide the development of interventions to prevent the spread of antibiotic-resistant bacteria.



Antibiotic Stewardship Programs

Antibiotic stewardship programs aim to improve the use of antibiotics by promoting the appropriate use of antibiotics, reducing unnecessary antibiotic use, and preventing the development of antibiotic resistance. The effectiveness of antibiotic stewardship programs can be measured by tracking changes in antibiotic prescribing patterns, rates of antibiotic-related adverse events, and the incidence of antibiotic-resistant infections.

We Welcome New Donations!

If we join our forces, we can make bigger changes. We welcome all initiatives to support this important cause! If you are interested in learning more about donations and how your company/ you can support, please contact our Secretary General

Cecilia Dahlström:
cecilia.dahlstrom@parfoundation.org

Member of the Effektfullt Network

Since 2020 PAR Foundation is a member organization of the Swedish impact measurement network Effektfullt.

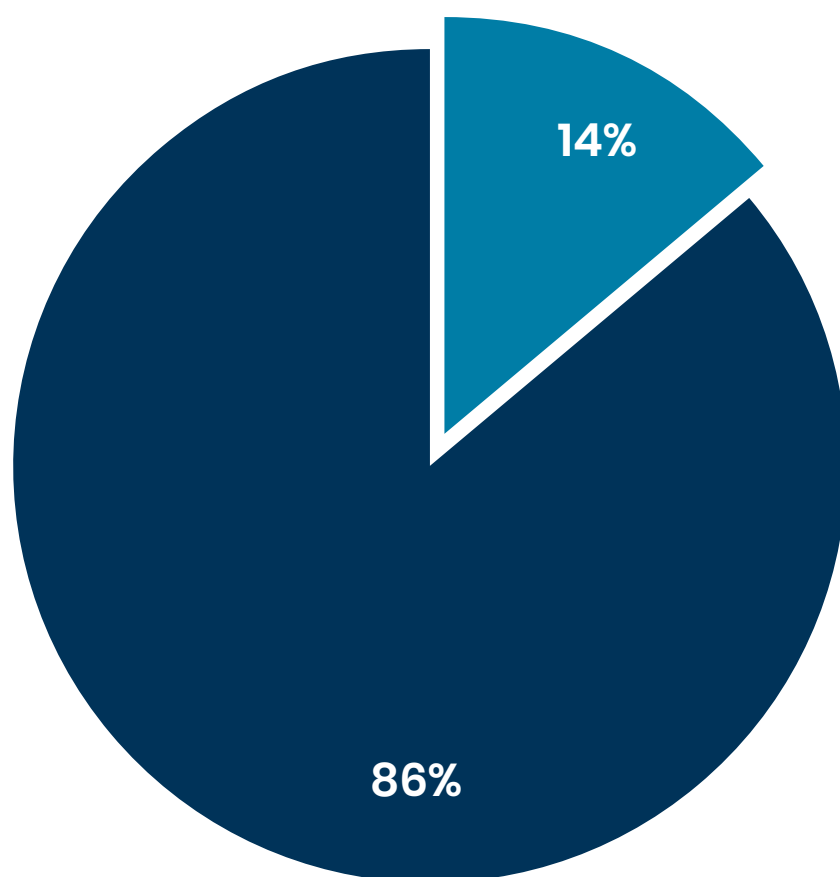
We have participated in training sessions on monitoring progress toward system change and impact reporting, and we are a part

of a collaborative cluster of funding organizations. The aim is to continuously improve how we measure, evaluate and report the impact of our work. By doing so, we can share what we learn with other stakeholders as well as refine our strategies to prevent antibiotic resistance.

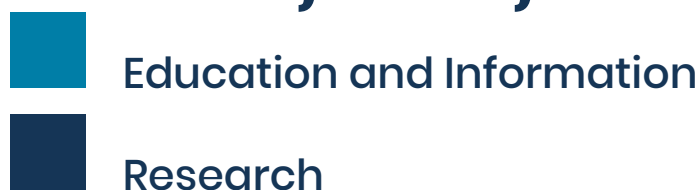
Effektfullt

Grantmaking in 2018–2022

Since PAR Foundation was founded, a total of **SEK 12,400,000** (approx. **EUR 950,000**) has been granted to research, education and information projects aiming to prevent antibiotic resistance. The covid-19 pandemic has affected many of the projects funded by us, mainly in the form of delays. Most of the projects are therefore still in progress.

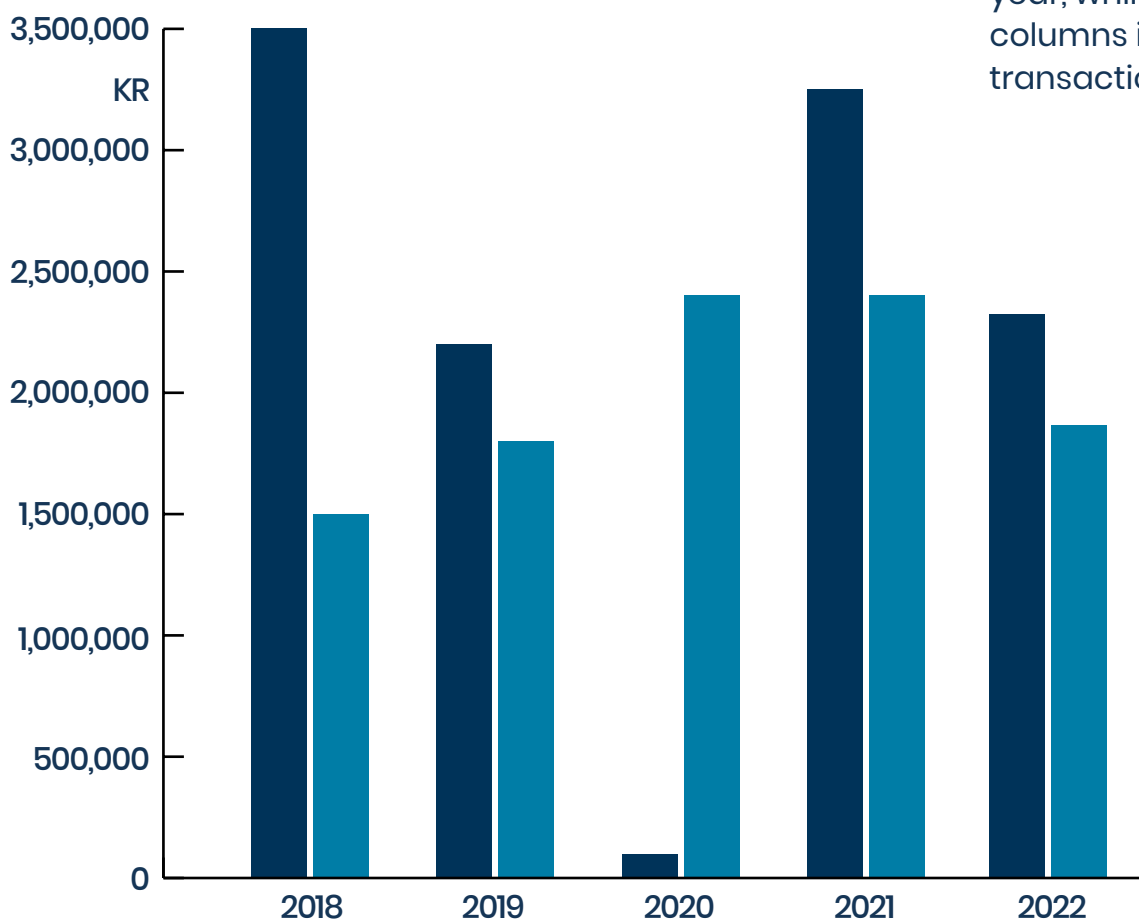


SEK 12,400,000



Grant Decisions & Distribution

Projects typically range between **1-3 years** in duration and receive their grants in **annual pay-outs**. The darker columns indicate the amount that was granted in a given year, while the brighter columns indicate the transactions.



Grant Overview

The table below lists all funding granted by PAR Foundation since the organization was founded. The first two calls, 2018 and 2019, were exclusively for Swedish applicants and had a focus on projects that related resistance prevention to the immune system.

Following internal assessments of how to achieve the highest impact with our funds, the grant call in 2021 opened for international applications and targeted infection prevention among elderly. Almost every project has experienced delays caused by the covid-19 pandemic.

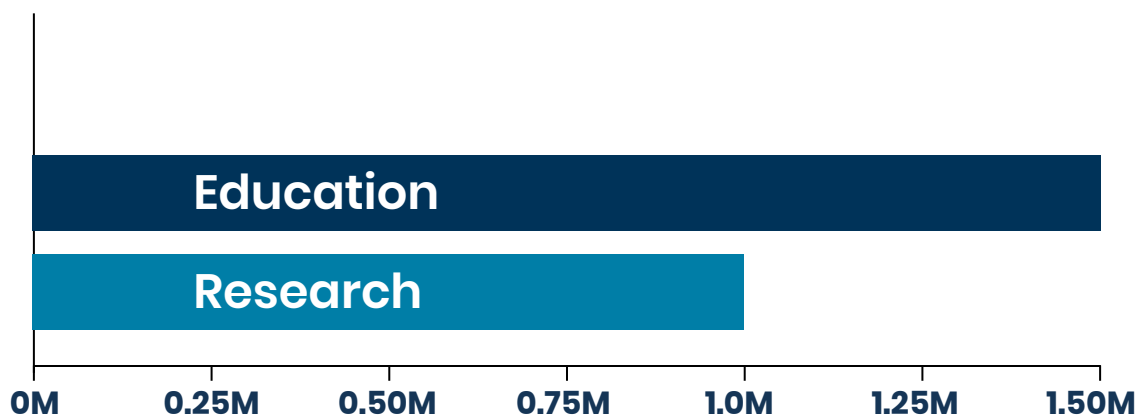
Grant Year	Recipient	Project	MSEK
2018	Bergman, Karolinska Insitutet	Activation of innate immunity as a novel treatment against multidrug resistant bacteria (Completed)	0.5
	Brighenti, Karolinska Insitutet	Studies on immune modulation and host directed therapies with the aim to prevent antibiotic resistance in tuberculosis (Completed)	1.6
	Koskiniemi, Uppsala University	The use of armed probiotics to prevent bacterial infections and to eradicate multi-drug resistant normal flora (Completed)	1.4
	Giske, Karolinska Insitutet	Engineering the intestinal microbiome in patients with gut carriage of resistant bacteria (Completed)	0.5
2019	Film Project	Documentary Film Project (Discontinued)	0.15
	Sjöling, Karolinska Insitutet	Inhibition of attachment of pathogenic bacteria can prevent an inflammation-induced overgrowth of pathogens, inhibit disease, and minimize preventive and therapeutic antibiotic use (Completed)	1.0
	Lindén, Gothenburg University	Induction of the mucosal defence mechanisms against infection (Completed)	1.0
2020	Uppsala Health Summit	Managing Antimicrobial Resistance through Behaviour Change: Conference support (Completed)	0.1
2021	Bergman, Karolinska Insitutet	Investigating higher doses of Vitamin D for prevention of respiratory tract infections among elderly (Discontinued)	1.0
	Frimpong, University of Ghana	Exploration of genomics of host-pathogen interactions underlying Streptococcus pneumoniae infection in the Ghanaian elderly population (-2023)	1.0
	PPCIRA, Portugal	Reducing urinary tract infections in Portuguese elderly care through training and behaviour change interventions for caregivers (-2023)	1.0
	Govett, UK	International fellowship program for future leaders in AMR (Completed)	0.24
2022	Armah, CIPRI, Ghana	Developing appropriate prescription and guidelines for the treatment and prevention of urinary tract infections in elderly nursing homes in Accra; the molecular way (-2024)	0.8
	Mugabu, Oasis Health, Rwanda	"Oasis Health Antibiotic Stewardship Program" (-2023)	0.3
	Mahindroo, PIGMER, India	"Spread awareness in farmers to reduce antimicrobial resistance in commercial poultry industry" (-2023)	0.3
	Fady, UK	"Raising awareness of Antimicrobial Resistance (AMR) in UK Parliament" (-2023)	0.3
	ReAct Africa, Zambia/ Kenya	"Project for the Antimicrobial Resistance Leadership Program for Tertiary Students in Africa" (-2023)	0.3
	Waruingi, SAS Africa, Kenya	AMR Ambassadors program for young people in Africa (-2023)	0.3

Methodology

When selecting themes for 2022 year's grant call potential focus areas from the problem mapping (see our mapping in Appendix) were investigated, and a decision was made to continue support research on infection prevention among elderly. Potential applicants were reached through newsletters, social media and by contacting corresponding authors of relevant research articles, resulting in **58 applications**. After initial screenings and second reviews 21 applicants were invited to final interviews out of which **one African team got awarded a grant**.

A new category of the grant call was initiated for early career applicants. Applicants were reached through social media, through university student bodies and partner networks. At the end **157 teams applied**, half of the candidates passed a second review round and from the 26 teams that were interviewed **5 grants were handed out** in Europe (1), Africa (3) and Asia (1).

We always appreciate feedback on our strategy and process, as well as support with spreading information to potential applicants – please find our contact details at www.parfoundation.org



Our Guiding Principles

As the problem mapping shows, antibiotic resistance is an incredibly complex issue and the work that can prevent antibiotic resistance involves virtually every aspect of how our society is

organized. A challenge we have is that of distributing our limited resources in the way that will have the highest chance of generating impact, and we have therefore adopted the following core guiding principles for our work.

Importance

Perhaps the most obvious principle is that we should prioritize initiatives of high importance to prevention of antibiotic resistance. In practice, this can be understood as how much impact we could expect from addressing a certain problem: Would we potentially be preventing a hundred instances of antibiotic use annually, or a hundred thousand? Would we be addressing use that is especially prone to driving resistance development, or that is linked to what the WHO has identified as priority pathogens?

Overlooked Areas

The second principle is to prioritize work that, despite being important for prevention of antibiotic

resistance, receives little funding from other sources. For a field of research that already receives a lot of resources from major funding agencies, a few additional grants a year would not matter much: the most valuable projects would be funded regardless of our contribution. Meanwhile, there are initiatives with great potential that struggle for funding because seem less academically prestigious or because they are carried out in a region of the world where funding is scarce: for such work, our funding can make a great difference.

Catalyst Role Potential

As we are a relatively small funder we also aim to

prioritize projects where there is a potential that our contribution could have a catalyst role. This could mean that we pitch in the first funding for a bold project that helps it to attract additional funding from other sources, or that we might fund pilot studies to generate preliminary results that could support an application to a major grant agency.

Feasibility

Feasibility is an important criterion, but it should not be confused with risk aversion. What we aim for with the principle of feasibility is to assess that there is a plausible theory of change, that is, a plausible way that an initiative can lead to significant impact, and that the team is competent and have reasonable resources.

What the future holds... Grants in 2023

2023 marks the 5th Edition of PAR Grant Call.

According to the WHO, the overuse and abuse of antibiotics in healthcare, farming and food production has created a real threat to humanity. An immediate global synchronized action plan is required to avoid

entering a post-antibiotic era where common infections can once again be fatal. WHO's objective to preserve antibiotics effectively for today's and future needs requires an increased public awareness.

What the

What the future holds...

Research Grant

As a response to these global goals of preventing spread of antibiotic resistance we will look for grantees who drive research to find new methods to prevent antibiotic resistance.

We believe that antibiotic resistance needs to be addressed with competence from diverse academic fields. Our assessment is that the potential career paths in AMR for early career individuals outside the mainstream AMR sciences (medicine, biotechnology and biology) are often unclear and making it harder to attract such talent to work in the field.

We hope to encourage young talent and the next generation of researchers to apply to our grant program that is calling for educational initiatives to spread knowledge on AMR in a broader community.

Educational Grant

Based on the successful initiative to offer 12-months early-career grants we will also continue to look for educational initiatives that spread awareness and increase knowledge on preventive actions to fight antibiotic resistance.

Both grant calls will be open for applications from any country in the world. We require grantees to provide transparent and accessible reporting of results and methods. Grants will be conditional on the grantee to sign a code of conduct and the foundation's right to terminate the agreement in the event of a breach of the code of conduct or sanction provisions. The foundation also applies a screening of grant recipients before they receive payment.

Reports from Our Grantees

Early Career Concluded Grantee Project

Project Title:

A Digital Program for Future Leaders
in AMR | [Anna Govett](#)

Affiliation: Project Director, Future Leaders Against AMR

Funding: SEK 240,000 (EUR 24,000)

Duration: 2021-2022

Outputs: 10 Weeks Virtual Programme to Support Students and Young Professionals

As the pandemic hit the world, then Medicine student Anna Govett saw a need to spread awareness on AMR and to coach young future leaders on how to share their knowledge in their near communities. PAR Foundation decided to award Anna with a grant to realize her idea. Below you find a summary of her successful programme “**Future Leaders Against AMR**”. During 2022 the collaboration

continued thanks to our funding. One necessary aspect of the response to AMR is the engagement and education of the general public, and investment into local leaders who can spearhead community action across the world. As a collective action problem on a global scale, AMR requires collaboration across disciplines and borders, now. Future Leaders Against AMR has been a successful initiative

designed on this premise; an international 10-week programme for students and early career professionals, aiming to support their knowledge and skills development as the next generation of change-makers in the work against AMR.

The programme was held virtually and was organised entirely by Project Director Anna Govett, who received funding from the Foundation to Prevent Antibiotic Resistance (PAR Foundation) to work full-time on the planning, execution, and evaluation of the project for 10 months from August 2021 to May 2022.

The programme involved experts from academia, the private sector, the public sector, and non-profit organisations to provide the highest quality and most thorough talent-

development programme possible. The participants were offered the opportunity to explore the many fields relevant to AMR through workshops and lectures held online by experienced professionals and experts from multiple disciplines and industries, relevant career guidance, soft-skills training, project management opportunities, and personal mentorship from current AMR experts and professionals at leading institutions.

In total there were 40 places available in the programme, and the recruitment process yielded 317 applications from 57 countries.

Most of the 317 applications were received from 57 countries, with the top five most represented nations being Nigeria, Kenya, Uganda, Mexico and India.



EUR 24,000



10 Weeks

virtual programme



317

applications



40 Slots

available in the programme

Project Title:

Targeting the Immune Response to Fight AMR Tuberculosis (TB) | Susanna Brighenti

Affiliation: Associate Professor in Immunology at Karolinska Institutet, ANA Futura, KI Campus, Flemingsberg

Funding: SEK 1.6M (EUR 160,000)

Duration: 2019–2022

Outputs: 6 Publications

Summary: Tuberculosis (TB) remains one of the most fatal infectious diseases globally, causing approximately one death every 20 seconds. The persistence of tuberculosis in human hosts over time is a result of its ability to infect and manipulate immune cells. This unique feature of TB poses significant challenges in treatment procedures, leading to complications in disease management.



The complex interplay between the host immune system and the infective agent has long been an area of active research, with the aim of developing effective therapeutic strategies against TB. The emergence of multidrug-resistant TB (MDR-TB) has further complicated the scenario, highlighting the urgent need for alternative treatment options. Despite advances in TB research and management, the global burden of TB remains high,

and efforts to combat this disease continue to be a significant public health priority.

Susanna Brighenti, a distinguished group leader at the Karolinska Institutet and an accomplished associate professor of immunology at ANA Futura in Flemingsberg, was awarded funding in 2019 from the PAR Foundation for her innovative research project exploring the use of nutritional compounds to restore protective immune responses in tuberculosis (TB) infection. This

exciting initiative aims to advance the understanding of the immune system's response to TB infection and identify new strategies to combat this global threat.

The funding from the PAR Foundation represents a significant milestone in the development of this vital research and underscores the importance of innovative research in advancing our knowledge of infectious diseases. Immune-stimulating agents improve immune cell function to boost the body's ability to combat pathogens, in contrast to antibiotics and other drugs that are aimed at eliminating microorganisms.

The major objective is to adopt such immune-enhancing therapy as an additional treatment option that could increase the effectiveness of conventional

antibiotics and lessen the emergence of antimicrobial resistance (AMR) in TB. In other words, it's like giving your immune system an energy drink so it can fight off infections like a champ. When someone has TB, antibiotics can be used to stop the bacteria from growing and spreading in their body. However, some TB bacteria can become resistant to antibiotics, making it harder to treat the infection. In addition to antibiotics, researchers are exploring the use of immune-enhancing compounds to help the body fight infection. These compounds work by activating immune cells, such as macrophages and T cells, which can help kill the bacteria. It is like giving the body an extra boost to fight the infection. The picture below shows how these immune-enhancing compounds can help the body fight TB.

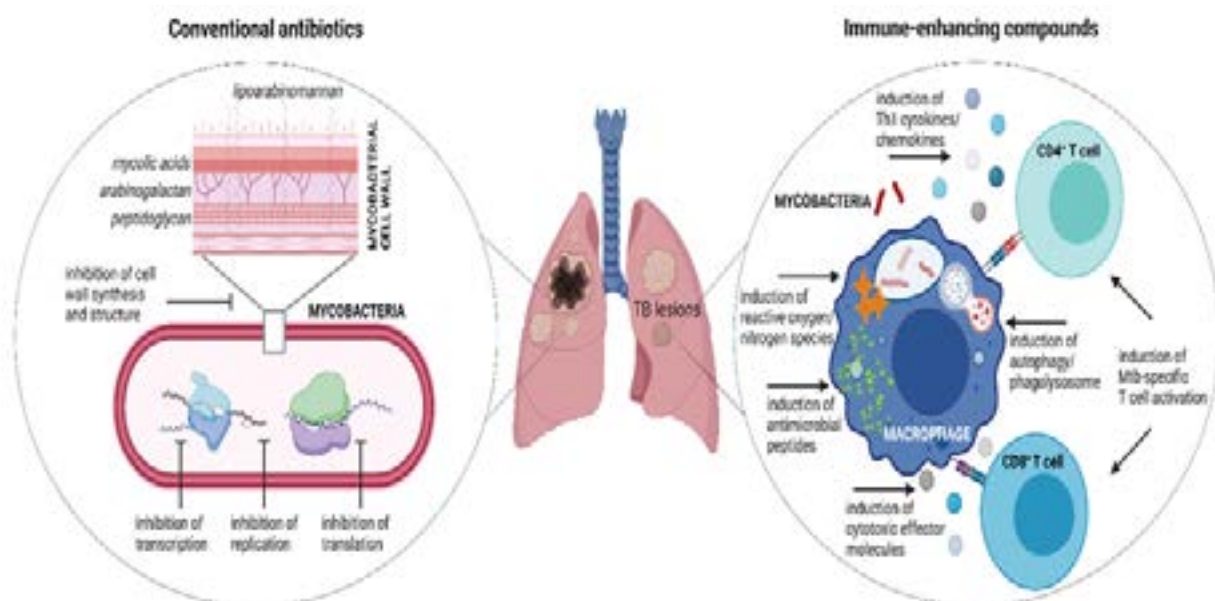


Image Description: The concept of immune-enhancing therapy in TB patients. While antibiotics act on bacterial targets to inhibit growth and survival, immune-enhancing compounds act on immune cells such as macrophages and T cells to induce antimicrobial mechanisms that can contribute to enhanced bacterial killing. (illustration created with Biorender.com)

As a result of the PAR-funded project, Susanna's research team has increased the number of HDAC inhibitors in their arsenal and discovered a particular class of drugs that successfully control host immune cell pathways to promote bacterial death. This work was completed at SciLife Lab in Solna in collaboration with colleagues from Linköping University and the Chemical Biology Consortium Sweden (CBCS). The study received

extra financing from the Swedish Heart-Lung Foundation (HLF) and the Scientific Research Council (VR), both of which have contributed. In summary, this finding has the potential to impact the therapeutic management of TB and MDR-TB disease at a time when antibiotic resistance poses a serious threat to human health. It could additionally influence fresh ideas for immunotherapy against different bacterial illnesses.

“The immune system is critical in fighting tuberculosis, but sometimes needs help. Immune-enhancing therapies offer new hope by strengthening the body's defenses against the infection.”
– Susanna Brighenti

Articles Related to the Funded Project in which PAR has been Acknowledged are Listed Below:

- [Reinventing the human tuberculosis granuloma: Learning from the cancer field](#)
- [Anemia is a strong predictor of wasting, disease severity, and progression, in clinical tuberculosis \(TB\)](#)
- [Immunosuppressive features of the microenvironment in lymph nodes granulomas from tuberculosis and HIV co-infected patients](#)
- [Immunomodulatory agents combat multidrug-resistant tuberculosis by improving antimicrobial immunity](#)
- [Polarization of M1 and M2 human monocyte-derived cells and analysis with flow cytometry upon Mycobacterium tuberculosis infection](#)
- [Polarization of human monocyte-derived cells with vitamin D promotes control of M. tuberculosis infection](#)

Project Title:

Interaction Between Enterotoxigenic Escherichia Coli (ETEC) and Bile Salts

| Åsa Sjöling

Affiliation: Senior lecturer, Karolinska Institutet

Funding: SEK 1.0M (EUR 100,000)

Duration: 2019–2022

Summary: The PAR Foundation has funded Åsa Sjöling's research at the Karolinska Institutet, where she studies the interaction between Enterotoxigenic Escherichia coli (ETEC) and bile salts.

As much as we love to travel, nothing ruins a trip like a bout of diarrhea. While often dismissed as a minor inconvenience, it can be a serious problem in endemic areas, where it can cause severe dehydration and even death in young children. Enterotoxigenic Escherichia coli (ETEC) is one of the main culprits behind this scourge, causing millions of cases every year. But what if we told you that the solution to this problem might lie in the very molecule that helps digest our food?

This idea is the focus of Åsa Sjöling's research at the Karolinska Institutet, where she studies the interaction between ETEC and bile salts. Bile salts are molecules produced by our liver and released into the gut after a meal to aid in digestion. While most bacteria can't survive in the harsh environment of the

gut, some pathogenic species, such as ETEC, have evolved to use specific bile salts as a signal to turn on virulence.

In previous work, Sjöling and her team found that one such bile salt, glycocholate, can upregulate the ability of ETEC to adhere to intestinal cells, making it more pathogenic. The current project, funded by the PAR Foundation, aims to build on these findings by studying the molecular mechanisms behind this process and identifying potential protective bacteria that can decrease the amount of glycocholate in the gut.

To do this, the team is using cutting-edge techniques such as organoids and deep metagenome sequencing. Organoids are three-dimensional structures that mimic the architecture and function of human organs, allowing researchers to study

the interaction between ETEC and intestinal cells in a more realistic environment. However, adding bile salts to these cultures damages the cells, making this part of the project unfeasible. Instead, the team is focusing on determining the molecular adherence of glycocholate to a specific transcription factor, as well as identifying potentially protective bacterial species by co-culturing ETEC with an anaerobic gut bacteria culture and analyzing the shifts in prevalence using deep metagenome sequencing.

While it's still early days, the results so far are promising. The team has identified minor shifts in the prevalence of certain Bacteroides and Clostridium species, which are normally present in the human gut, and plans to study the interactions between these species and ETEC in future experiments.



THE
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