

What  
science  
can do

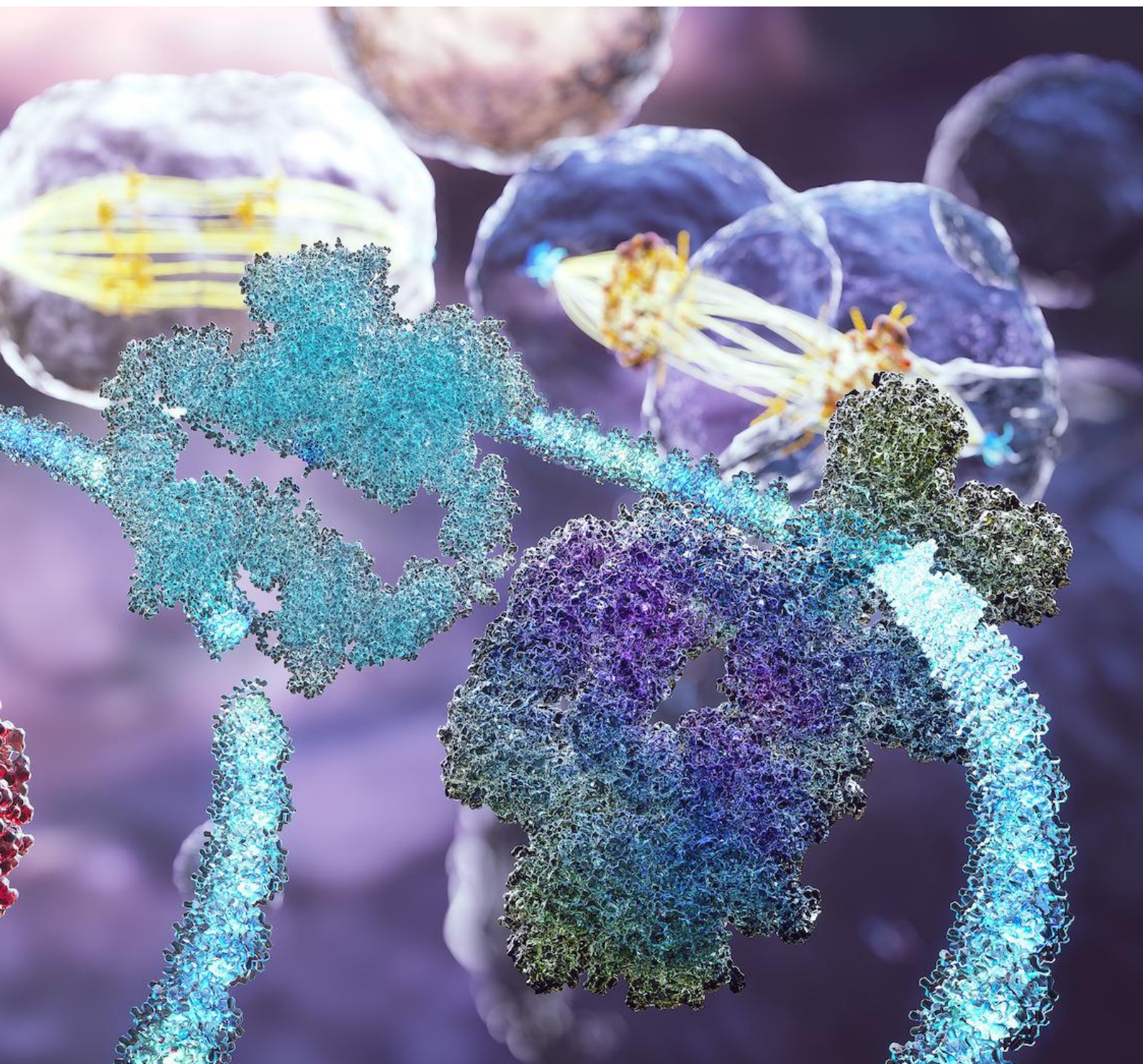


## CASE STUDY for Students

At AstraZeneca, we are driven by science, united by science, and every day, we push the boundaries of science to deliver life-changing medicines. We also know that breakthrough science doesn't happen in isolation.

We are happy that you are interested in our company, work, and research. We offer you opportunity to be part of this journey and fill the thrill of day-to-day activities performed within AstraZeneca.

Please carefully read the instructions and descriptions of the case study competition. Good luck and stay open-minded!



### Instruction

Below you will find 6 different business cases connected to AstraZeneca activities. **Please select only one case and develop the solution.** Your answer should be demonstrated in the form of **10 min presentation**, supported by slide-deck. You can also add any additional supporting materials. Your idea must be **presented in English or Polish**.

### Assessment

During the presentation, your idea will be assessed by AstraZeneca Committee that consist of experienced scientists, managers, and leaders. In addition, Committee, will assess your performance during presentation, quality of presented materials, communication skills and way of thinking.

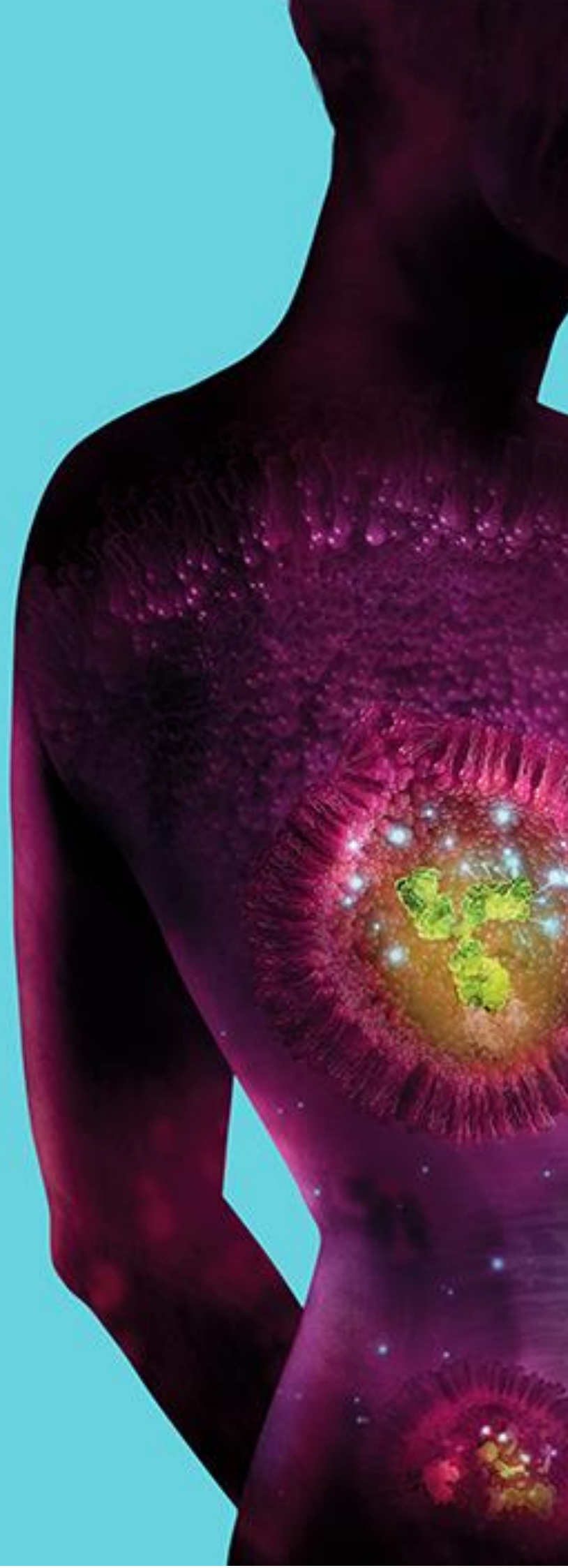
### Please note

*If question is general give general answer. If there is a clear statement that should be supported by details,, give as much insight as you can.*

*Stay open minded and think of solutions that are not obvious.*

*Please remember to consider environment and climate in your considerations.*

*Science should be always in the background, however you need to be convincing in your ideas.*



## CASE STUDY 1 - area: CLINICAL STRATEGY

Currently, there are a lot of articles concerning Neurological and Psychiatric Sequelae of COVID-19. Let's imagine that you were designated to be part of World Health Organization Committee that needs to **develop and publish** "Global mental health care and psychiatric prevention guidelines during COVID-19 pandemics".

Please present following aspects of this document:

1. Critical problem and threats for mental health care that you see in COVID-19 pandemics
2. Key assumptions that can lead to mental health improvements in global population (please include regional analysis, if applicable)
3. Propose the best options for short- and long-term actions that can improve mental health in COVID-19 affected regions
4. Was there any similar problem with mental health during earlier pandemic (e.g. polio)? Are there any lessons learned from previous epidemic events?



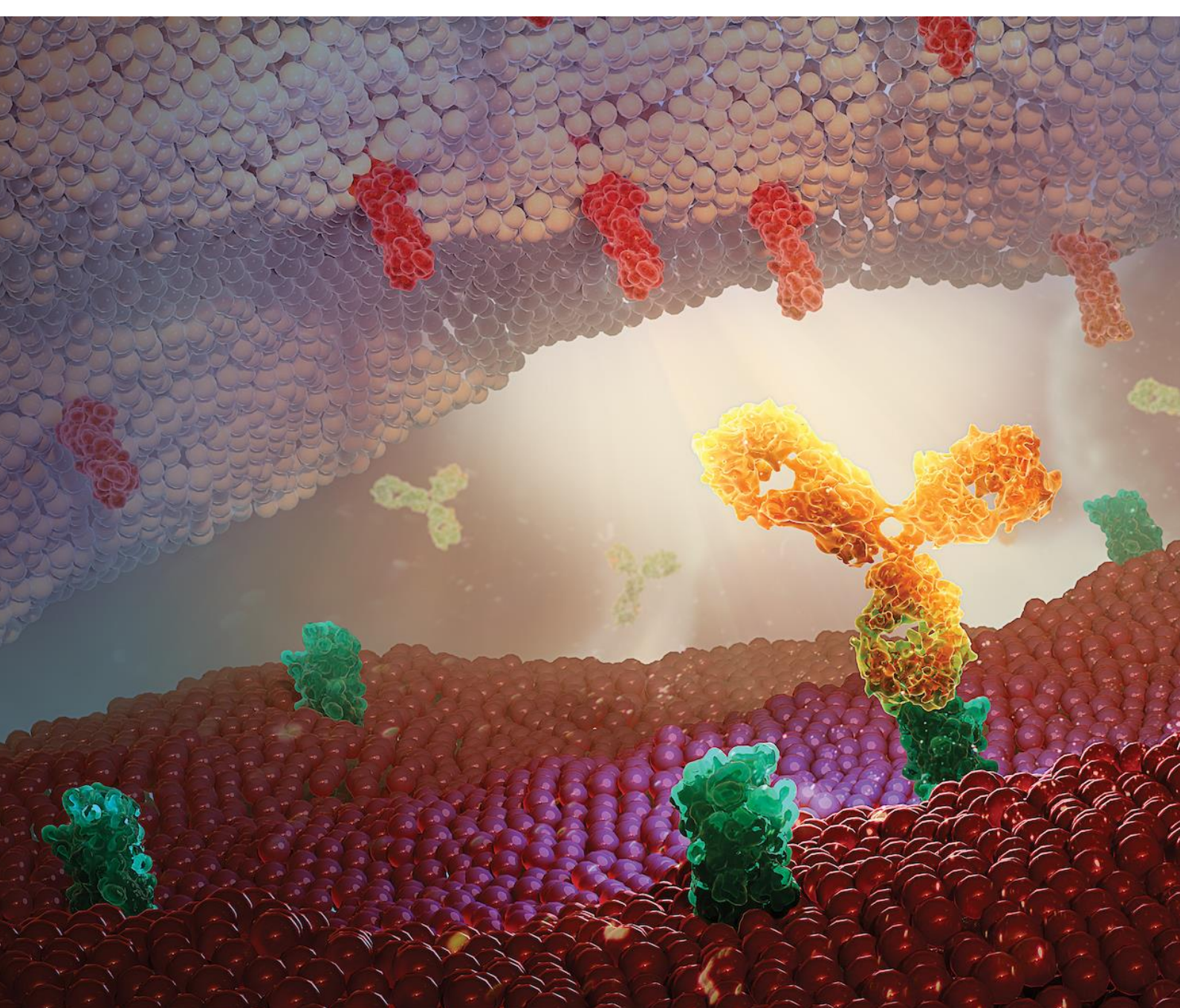
## CASE STUDY 2 - area: MEDICINE and CLINICAL OPERATIONS

Human Epidermal growth factor Receptor 2 (HER2) is found in 1 of every 5 breast cancers. This receptor promotes the growth of cancer cells and cancers who have high HER2 receptor are called HER2-positive breast cancer. Blocking HER2 receptor can have beneficial effects in stopping cancer growth. Can you explore what are drugs and latest trends for treating HER2 cancer patients?

In addition, breast cancer is the second leading cause of death from cancer in women in Sub-Saharan Africa. Please propose program or methods that give populations from underdeveloped and emerging countries access to innovative oncology treatment.

Please do not forget to include:

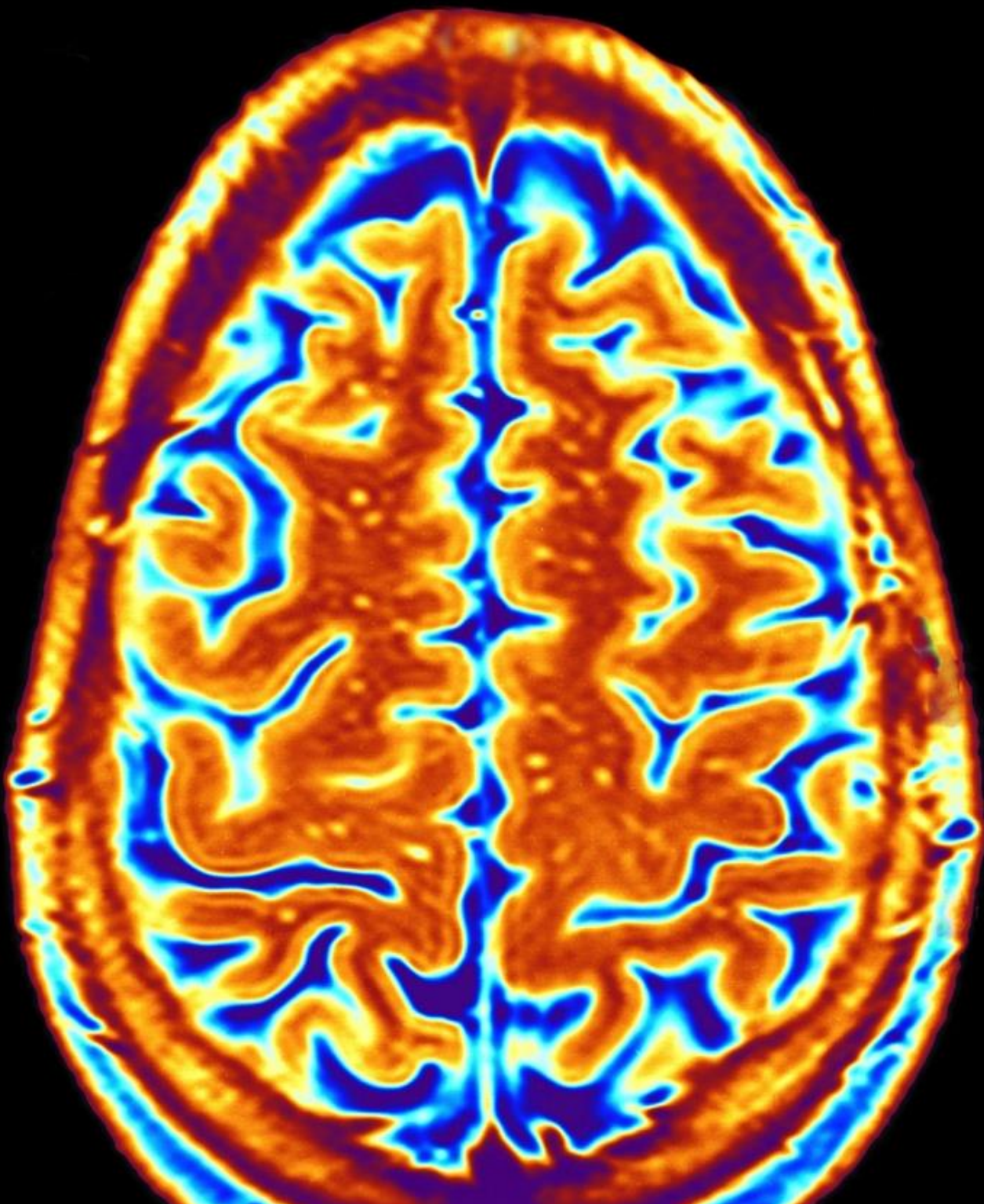
1. Analysis of critical problem (except financial) that you see in sub-Saharan Africa oncology strategy
2. Key assumptions that can lead to oncology strategy



## CASE STUDY 3 - area: BIOCHEMISTRY and MARKETING

Brain is the most complex and protected organ in human body. Delivery of large molecules such as proteins for treatments of various brain disorders has always been challenging because large molecule, such as proteins, do not cross the blood-brain barrier (BBB). BBB drug delivery is the limiting factor in the future development of new therapeutics for the brain. What are latest strategies for delivery of proteins to brain?

What is more, it is known that the drug based on both small molecules and biologics can be modified to cross the BBB. What drug you would select for such modification and why? Please perform SWOT analysis for such modification and present it on a matrix.



## CASE STUDY 4 - area: HUMAN RESOURCES / CORPORATE GOVERNANCE

You are a member of HR department in global company. Familiarize yourself with the situation presented below.

### *Description of the situation:*

Krzysztof is a part of a global research team focused on one of the very important part of Company's portfolio - SGLT1 inhibitor. Drug name is "X". Such project requires cooperation with different departments. This gives him many benefits, for example chance to meet other people and development opportunities due to e.g. cultures differences.

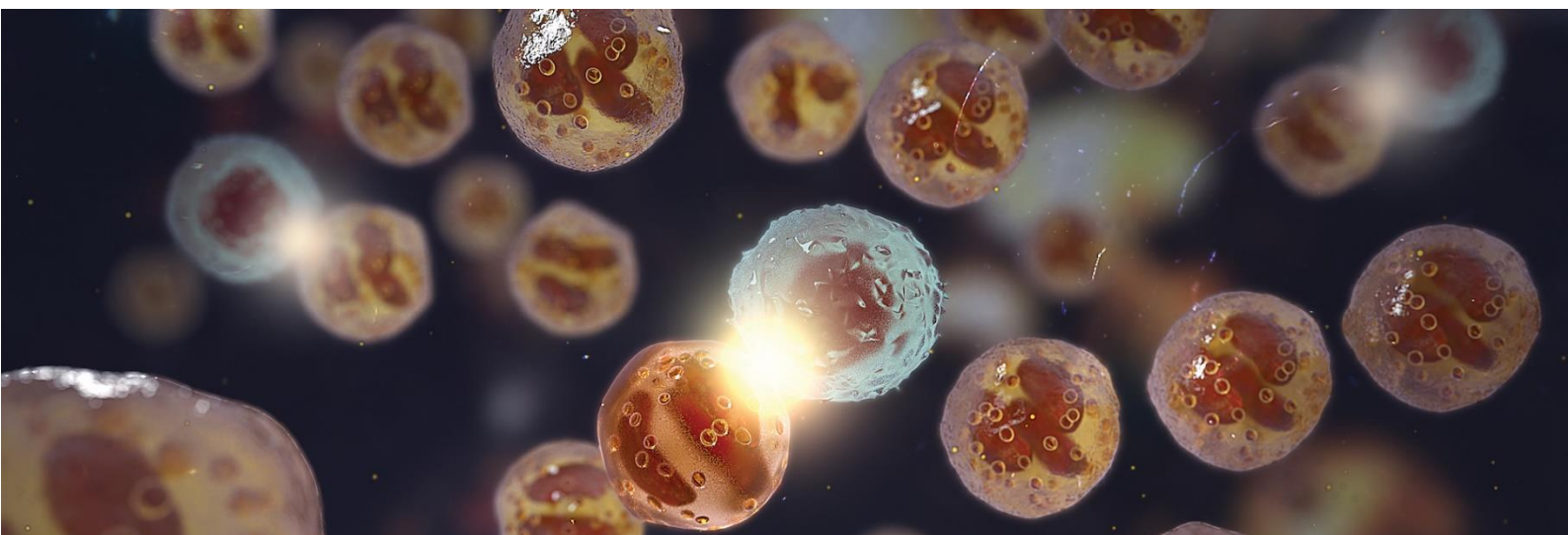
Krzysztof and research team are important, well recognized, and got challenging task – preparation of submission of Investigational New Drug (IND) Application to FDA. This is crucial document that gathers all results from clinical trials and proofs that drug X is safe and has efficacy to treat diabetes. X is a novel compound and results are very good – whole company hopes that FDA will grant "designation of breakthrough therapy" to the drug. Thus, from the beginning, there is hedge pressure on Krzysztof and expectations are very high.

What is more, Krzysztof is dissatisfied with the cooperation with other departments and teams. Leaders of other departments impose solutions on him, without any previous consultations. Many times, Krzysztof receives unclear instructions, and, as a result, wrong actions are taken – colleagues are pointing out his mistakes. All this creates stressful work environment and Krzysztof is in the middle of it.

Head of Krzysztof's department informed him (via mail) that FDA requested additional statistical documents to be attached to the submission, due to complexity of the results. He immediately redirected an e-mail, and this started discussions about unclear segregation of duties and responsibilities. All the e-mails were redirected to senior company managers, including CEO. CEO was not interested in the details and asked for prompt resolution of the situation.

The clue is:

1. What risks in delivery of IND do you see in this situation?
2. Please propose improvements in the operational model of this company
3. Please present the feedback (both positive and constructive) you would give to Krzysztof



## CASE STUDY 5 - area: DRUG DEVELOPMENT

Dissolution testing is the most resource demanding analytical task in early development of new medicines. The industry is looking for the way to streamline the testing, using different approaches e.g. matrixing of stability studies and automated dissolution systems. Still, the need for more efficient tools is pressing and new advancements have been made lately. New analytical tools have been proposed e.g. near infrared spectroscopy to rapidly measure properties that indirectly can predict the release of the active compound in tablets. There are also new AI tools proposed that can be utilized to use available data more accurately to better predict the behavior of the tablets.

You are a Head of Quality Control department and your task is to **select 2 most promising methodologies of dissolution testing for your company**. Please propose each method with analysis of scientific, operational, financial and resources pros and cons.



## CASE STUDY 6 - area: AI / INNOVATIVE TECHNOLOGIES

Please present scientific, legal, psychological, ethical, and moral aspects of following question: Can A.I. be an inventor?

Please present your ideas and discuss both pros and cons of usage of A.I. in creative work.

In your considerations, please do not forget about day-to-day activities and duties e.g. taxation of creative work, ownership of the intellectual property, influence on larger populations via social media, etc.





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