

How Open Science Collaborations open new possibilities for researchers, service providers and society:

Examples from the Life Sciences

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- ✓ Open
- ✓ Findable
- ✓ Accessible
- ✓ Interoperable
- ✓ Re-usable

- ✓ Reliable

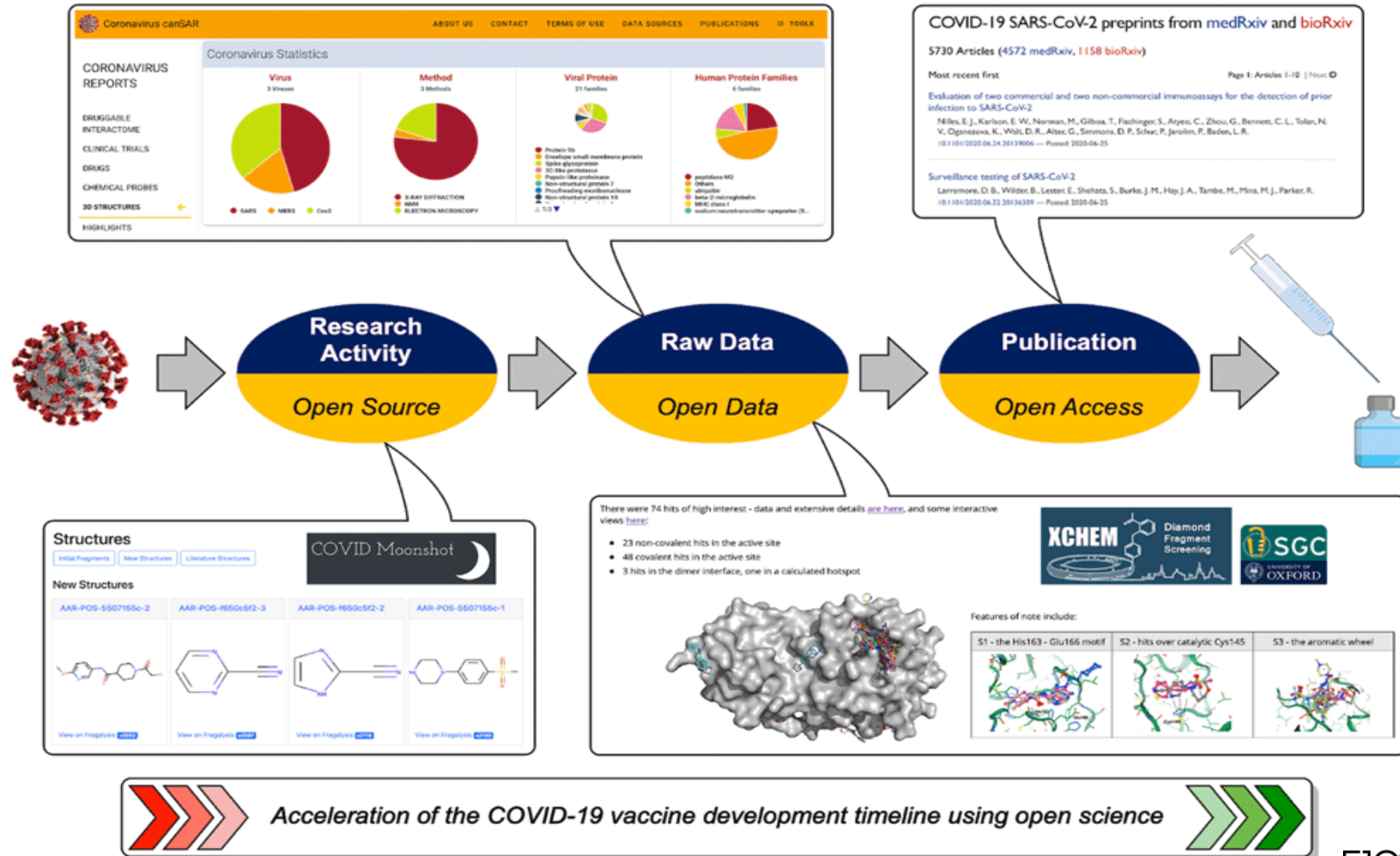
DATA
ONLY

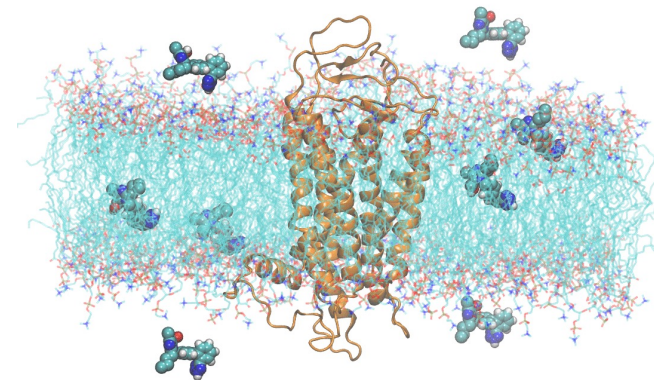
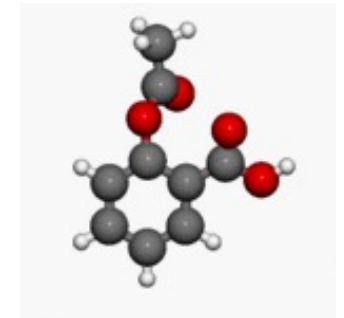
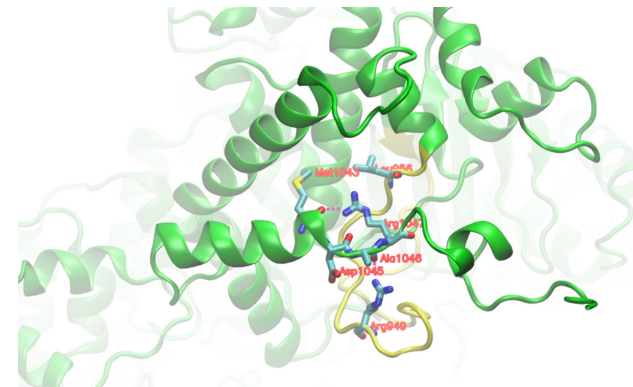
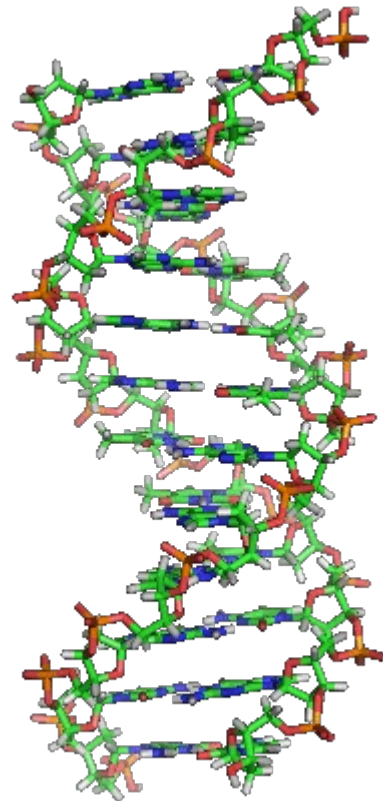
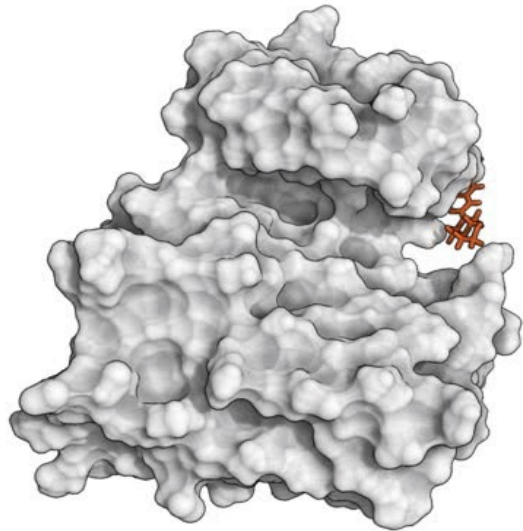
Key for

- ✓ **Driving Science**

- ✓ **Improving
Quality of Life for
European citizens**

Application of Open Science for COVID-19 treatment/vaccine development





Ingredio is an app that makes ingredients easy to understand

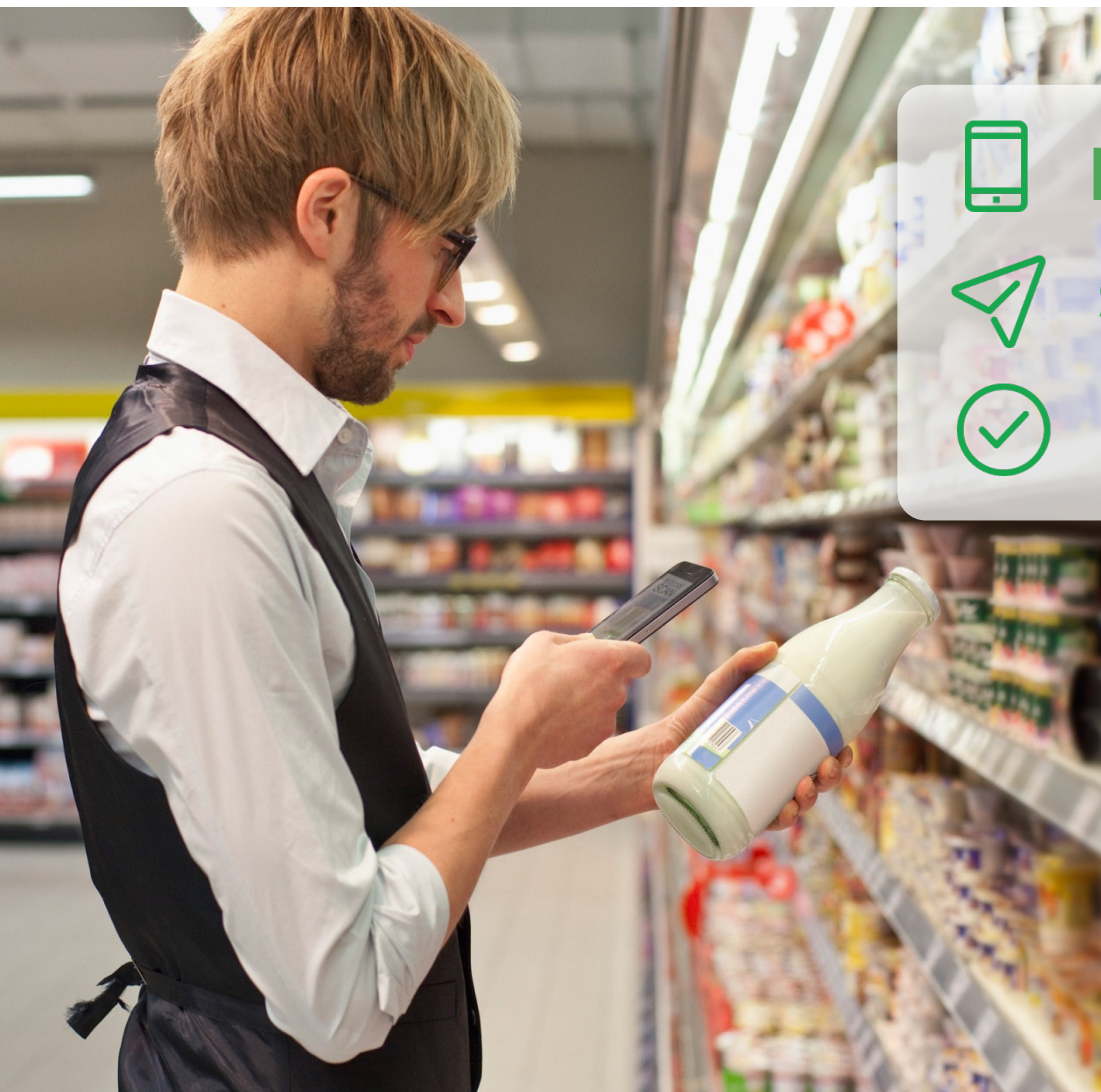
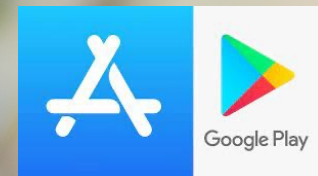


photo
send
learn




- ❑ Generate TB of data every month
- ❑ How to store, manage and analyze this data?
- ❑ What happens when I publish my data? How to make them FAIR?
Will my dataset get stolen and misused?
- ❑ How can I access datasets from other colleagues who have published similar research?
- ❑ Current databases mostly fragmented and duplicating research



- ❑ Store, manage, analyze TB of produced data
- ❑ Share datasets to the community upon publication
- ❑ Access datasets from colleagues and to without duplicating data
- ❑ More efficient dataset searching based on metadata
- ❑ Help with evaluation and certification of datasets (e.g. FAIRsFAIR)
- ❑ Training on best practices for Open Science & FAIR principles
- ❑ Opportunities to collaborate with Pharma Industry opened up for my lab / Networking
- ❑ Open Call: Received computational resources & Increased computational power of my lab

Our in-house drug discovery tools: Onboarded on NI4OS-Europe


 **EXPLORE**
NI4OS-Europe Catalogue

Thematic services

ChemBioServer is a publicly available web application for effectively **filtering and clustering chemical compounds** used in drug discovery.

<http://chembioserver.vi-seem.eu/>

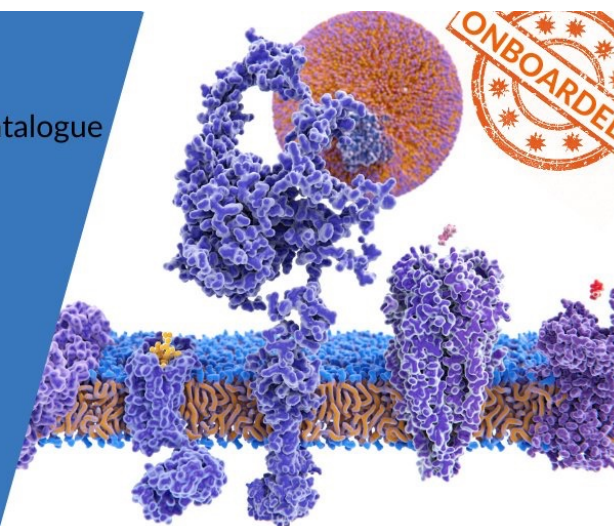


 **EXPLORE**
NI4OS-Europe Catalogue

Thematic services

DREAMM is a novel web-based tool that **predicts the protein-membrane interfaces of peripheral membrane proteins** using ensemble machine learning.

<http://dreamm-ni4os.eu/>

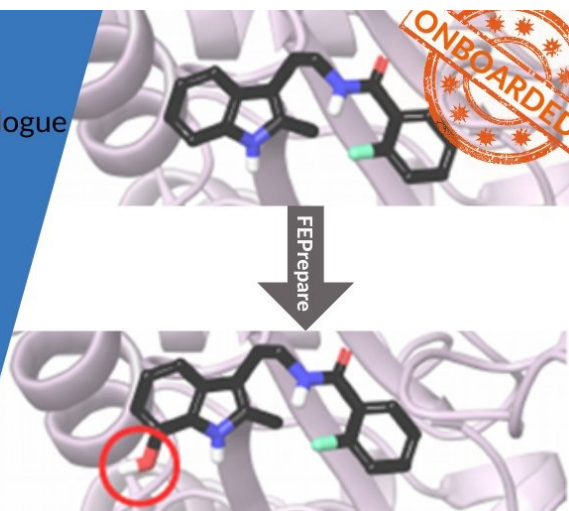


 **EXPLORE**
NI4OS-Europe Catalogue

Thematic services

FEPprepare is a webserver, which automates the set-up procedure for performing **NAMD/FEP simulations**.

<http://fepprepare.vi-seem.eu>

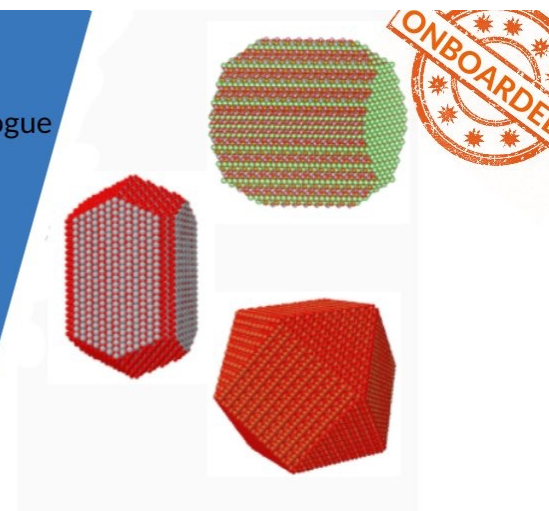


 **EXPLORE**
NI4OS-Europe Catalogue

Thematic services

NanoCrystal is a novel web-based **crystallographic tool** for the construction of nanoparticles from any material crystal structure.

<http://nanocrystal-seem.eu>



How NI4OS-Europe resources helped me as a Service Provider

- ❑ Publish, share and advertise services & resources
- ❑ NI4OS-Europe Accounting: Get statistics about access & feedback
- ❑ Free online platform to manage service requests
- ❑ Interact with users more efficiently & understand needs
- ❑ Get support for user authentication
- ❑ Open Service to a wider base
- ❑ Boosts visibility and discoverability of my lab
- ❑ Onboard web-based thematic services in one common, unified portal
- ❑ Opened-up possibilities for collaborations

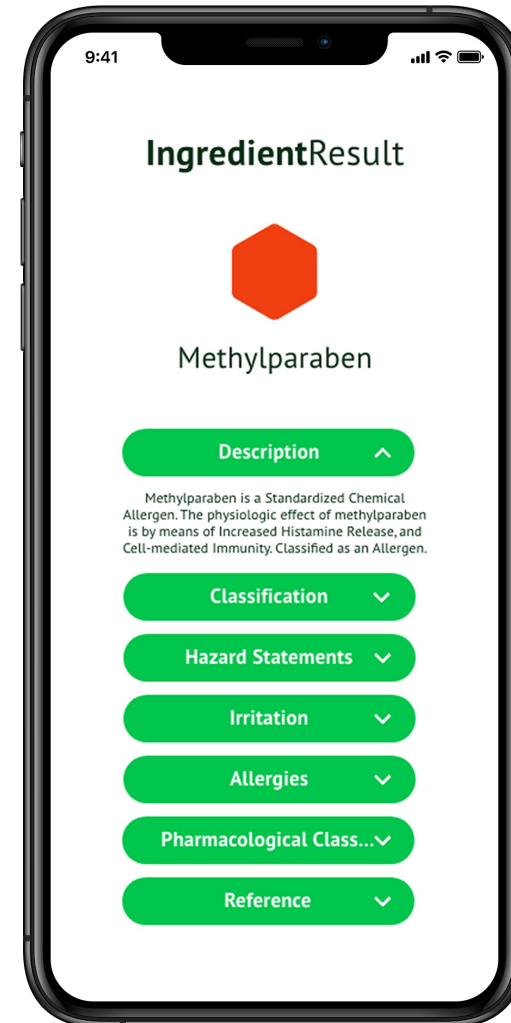
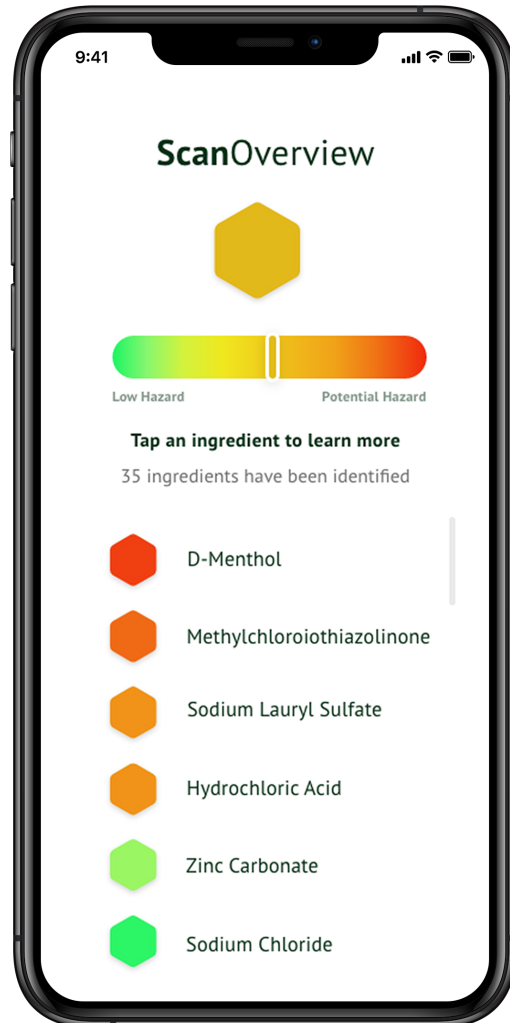
Ingredio



Enhancing the food & cosmetics OpenAIRE
Research Graph for consumer health

Ingredio: Users can check if the product has ingredients with potential hazards for human health

Unique proprietary scientific algorithms & scoring function



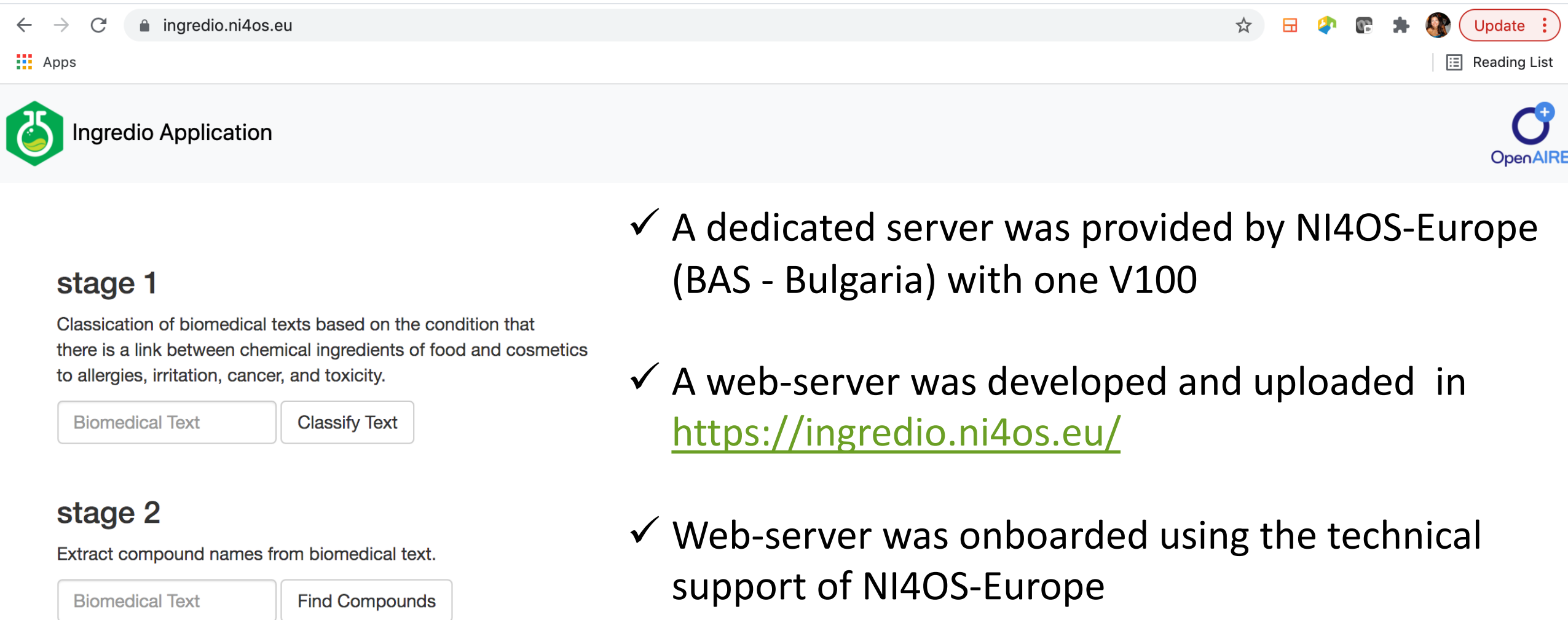
Level of hazard per ingredient*



* Information sourced from institutional databases





Onboarding Platform to NI4OS-Europe



← → ↻ ingredio.ni4os.eu ☆ 🏠 🌐 📄 🧩 👤 Update ⋮

Apps | Reading List

 Ingedio Application 

stage 1

Classification of biomedical texts based on the condition that there is a link between chemical ingredients of food and cosmetics to allergies, irritation, cancer, and toxicity.

Biomedical Text Classify Text

stage 2

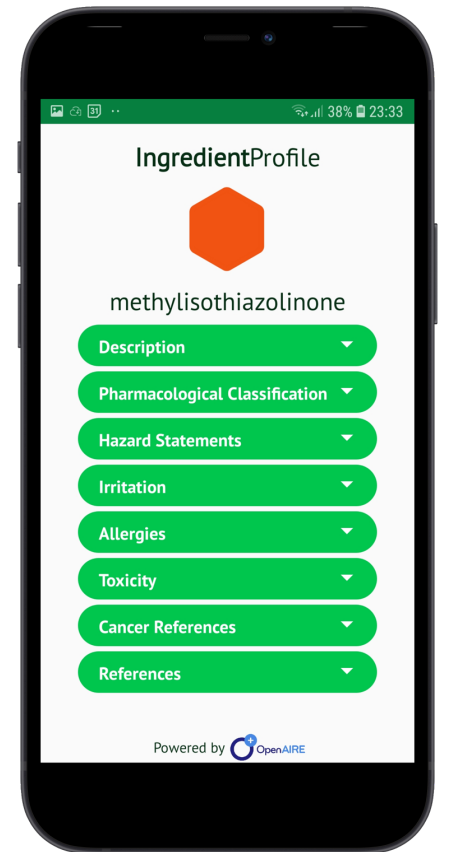
Extract compound names from biomedical text.

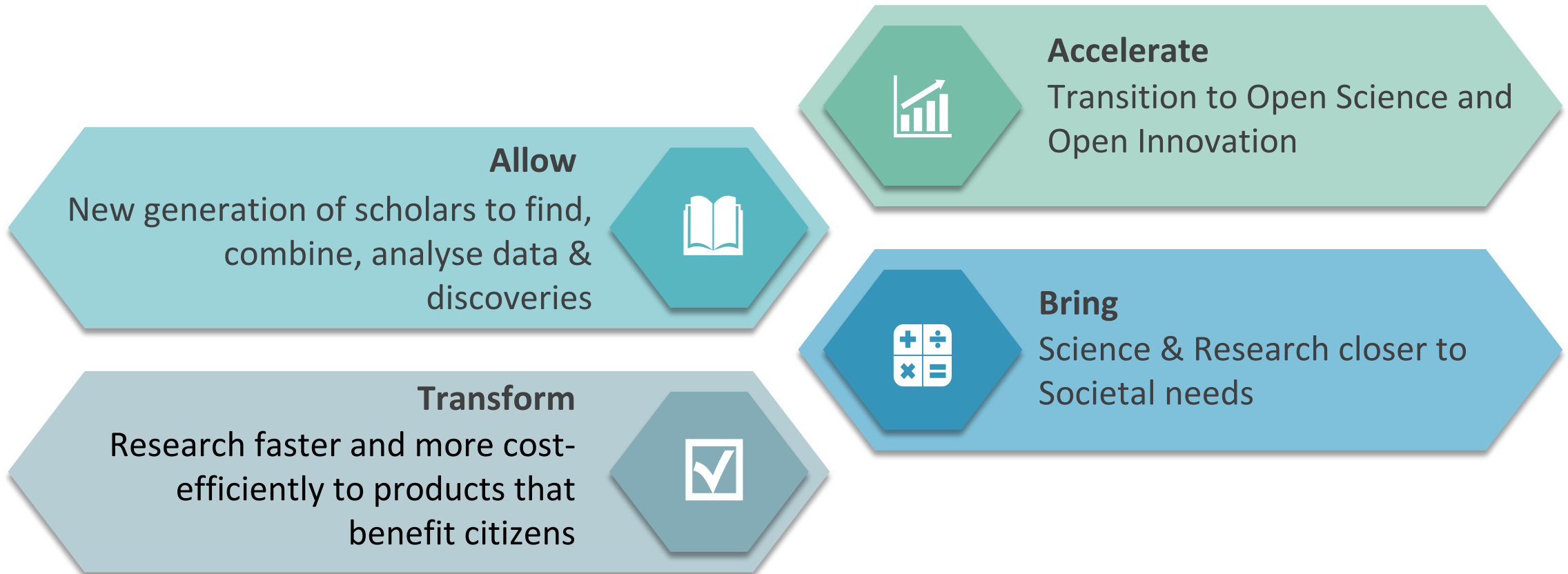
Biomedical Text Find Compounds

- ✓ A dedicated server was provided by NI4OS-Europe (BAS - Bulgaria) with one V100
- ✓ A web-server was developed and uploaded in <https://ingredio.ni4os.eu/>
- ✓ Web-server was onboarded using the technical support of NI4OS-Europe

Benefits for Companies / SMEs / Community

- ❑ Code was provided to OpenAIRE and uploaded to Github
- ❑ Beta testing of final products was largely completed
- ❑ The service was integrated to EOSC and was onboarded
- ❑ Received core resources to run the service
- ❑ The Ingredio database was significantly enriched, which aids our SME competitiveness
- ❑ European citizens can now be better informed about potential hazards in food and cosmetics ingredients
- ❑ Open science promotes citizen trust in science





- ❑ Early career researchers and professionals are at the core of Science
- ❑ Crucial relevance in the process of steering toward the standardization of Open Science practices
- they will become the future decision makers of the institutional change that necessarily accompanies this transition.
- ❑ ECRs' knowledge and positive attitude to Open Science likely linked to the extent to which they implemented these OS practices
- ❑ Typically less entrenched in their methods and workflows than more senior scientists



- ❑ It is delegated to PhD students to implement FAIR, licences and related data management steps in research labs.
- ❑ PhD students will choose which services they will use to do the assigned tasks, how to organise and store generated data, etc.
- ❑ Thus, if we point them to EOSC as early as possible they will use it to accomplish their goals.
- ❑ Young researchers are open minded and building their way of doing science → ensure that Open Science and EOSC are part of their comfort zone.
- ❑ Build the mentality for Open Science early



- ❑ Training courses for 1st year PhD students of North Macedonia and Serbia
- ❑ Mandatory workshops on Open Science and EOSC for PhD students
- ❑ Open Science Community Serbia - <https://oscs.open.ac.rs/>
- ❑ Organize Conferences and Workshops dedicated to Open Science, free software and open hardware, e.g. <https://pssoh.etf.bg.ac.rs/>
- ❑ [Open science: Conference on Open Research Data in Slovenia](#)
- ❑ Introduce OA student journal: <https://ksiocasopis.wordpress.com/arhiva>
- ❑ Young Academy of Slovenia working group on Open Science
- ❑ [Eurodoc Open Science Ambassador Training course](#)
- ❑ National Bulgarian research program for young students on Open Data and data policies

- ❑ Establish Early Career Researcher focused group within EOOSC
- ❑ Network across domains to establish an interdisciplinary network of peers
- ❑ Target students from the level of high school with specialized lectures
- ❑ Approach ECRs in science festivals & attract their attention
- ❑ Postdoc schools practicing open science: ECRs seeing their own peers speak is more convincing
- ❑ Build connections between decision makers and students
- ❑ Have answers for ECR Open Science endeavors and benefits but also how to overcome barriers
- ❑ Importance of EOOSC Promoter and Researcher Engagement Task Force



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