



SISSA

Scuola Internazionale Superiore di Studi Avanzati



Prof. Ing. Gianluigi Rozza – SISSA Director's Delegate, Prof. Stefano Ruffo

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SISSA in brief

- **Institute for Advanced Studies, Scientific center of excellence**, with a special statute and State funded, within the national and international academic scene, located in Trieste
- The first (1978) University in Italy created to offer **PhD courses** and entirely focused on post graduate teaching and research
- Three main research areas: **Physics, Neurosciences and Mathematics**. All teaching and research activities are conducted in English



SISSA Proof of Excellence

SISSA holds the **Top Position among the Northern Italian universities** for research quality (4th national position), according to the rankings compiled by ANVUR, on behalf of the Italian Ministry for Education, University and Research. **80% of researchers are affiliated to “Excellence Departments” funded initiative (MIUR).**

The quality level of the research is further confirmed by the fact that within the competitive field of European funding schemes (ERC) SISSA holds the **Top Position among all Italian scientific institutes in terms of research grants obtained (21) in relation to the number of researchers and professors (71).**






SISSA for Health 4.0

- Laboratory of Prion Biology
- Laboratory of Cerebral Cortex Development
- Laboratory of Neurogenomics
- Neuroscience and Society Lab
- Mathematical Analysis, Modelling, and Applications
- Data Science, Scientific Computing and Cluster HPC (ICTP/SISSA)
- Molecular and Statistical Biophysics Lab
- Tactile Perception and Learning Lab
- 3D Printing and Advanced Robotics Lab



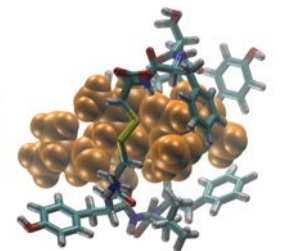
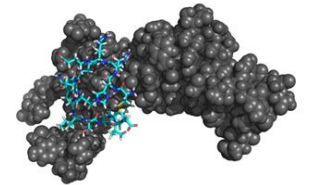
SISSA H4.0: Competences & Technologies

- **NOVEL TREATMENT FOR GLIOBLASTOMA** consisting in an Innovative Gene Therapy Approach for Tumor Eradication (International Patent Application n. PCT/EP2016/070164);

- **FUNCTIONAL NUCLEIC ACID MOLECULE AND USE THEREOF** applicable in the development of new tools based on antisense non-coding RNA technology to improve protein synthesis (Italian Patent Application IT 102017000105372, about to be internationally extended);

- **DIAGNOSIS OF NEURODEGENERATIVE DISORDERS** through Innovative Molecular Techniques for an Early and Definitive Disease Detection (under patenting procedure);




SISSA H4.0: Competences & Technologies

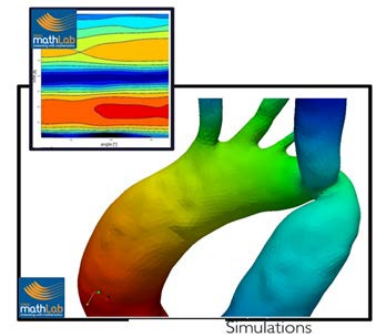
- **LOW COST PERSONALIZED PEPTIDE BINDERS FOR PROTEIN TARGETS:** proprietary computational protocol capable to optimize the sequence and binding conformation of peptides that recognize with high affinity an *a priori* selected protein epitope (main applications in the field of drug discovery);
- **PEPTIDE PROBES AS FAST ANALYTICAL METHOD OF TARGET MOLECULES** to be used as biosensors in order to monitor and screen routinely and at a low cost the presence of the target molecule in any solvent environment (main applications in the fields of Food Safety and Environment);





SISSA H4.0: Competences & Technologies

- Frontier research (within Graphene Flagship Project) aimed at exploiting the potential of technologies based on graphene- and other 2D materials in **BIOMEDICAL IMPLANTS AND NEURAL INTERFACE APPLICATIONS** (main objective is to integrate them into the development of novel implant technologies with therapeutic capabilities);
- Frontier research in the field of **PARAMETRIZED MODELS IN BIOMEDICAL APPLICATIONS**: development of specific numerical techniques to be employed in clinical practice in order to simulate blood flow in arteries and provide clinicians with mathematical reliable indices useful to quantify the disease and predict the success of a medical procedure;





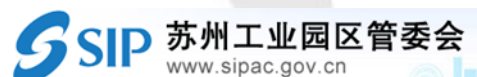
SISSA H4.0: Competences&Technologies

- **LOW COST TECHNIQUES OF DNA SEQUENCES OF THE GENOMA** (the most immediate ones in the fields of the diagnostics and forensic genetics with all the consequent industrial application);
- **ANALYSIS AND SIMULATION OF THE OPTICAL AND CHROMATIC PROPERTIES OF THE NATURAL COLORANTS OF THE AGRO-FOOD INDUSTRY**, with main applications in the field of the agro-food safety;
- Frontier research on Techniques and **PROTOCOLS TO MAINTAIN THE COGNITIVE TRAINING OF THE AGED PEOPLE**;



SISSA H4.0 Collaborations

- **179 current International Collaboration Agreements with the world's leading schools and research institutes**, i.e. Weizmann Institute of Science (Israel), Suzhou Industrial Park (China), MIT (Cambridge – USA), Riken Institute (Japan), etc.
- SISSA is collaborating with Suzhou Institute Systems of Medicine (China) on the **joint training of PhD students in the field of bionanotechnology and systems medicine**. This important important cooperation will raise the bionano and medical talent training level and enhance the competitiveness of bionano-medicine industry;
- Ongoing **collaborations with companies, innovative start-ups and end-user organizations - involved in the Health 4.0 Industry - all over the world**: IBM (Global), Mabyon AG (Switzerland), TransSINE Technologies (Japan), Tucker-Davis Technologies (USA), Bioviron (France), Sunnybrook Health Sciences Centre (Canada), Houston Area Hospitals (USA), etc.





Thanks for your Attention

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