31 January 2017

ERC Proof of Concept Grants 2016
Examples of projects

Novel neuroprotective stroke therapy

Stroke is the second cause of death and first of disability. The only drug available dissolves the occluding blood clot but is often contraindicated because of risk of fatal bleeding. Professor Harald Schmidt develops a combination therapy with synergistic effects addressing multiple mechanisms that will be safer and directly neuroprotective. It aims to raise survival together with improved neurological outcomes. It was discovered over the course of the initial ERC grant studying oxidative stress.

Researcher: Prof. Harald Schmidt
Host institution: Maastricht University
Project: Developing the first neuroprotective therapy for acute stroke (SAVEBRAIN)
Initial grant: Radical Medicine: Redefining Oxidative Stress (RADMED)
ERC funding: €150,000

Beating traffic with frontier maths

Traffic jams are a growing challenge in the modern-day world, with high economic and environmental costs. Better road management can help make highways less congested, increase traffic safety and reduce the damage to the environment and public health. With her ERC Starting Grant, ERC grantee Paola Goatin from Institut National de Recherche en Informatique et en Automatique (Inria) has developed mathematical models of traffic flows, and algorithms to optimize them. Now she aims to put the results of her theoretical project to practice and build an innovative Decision Support System for dynamic traffic control. Its novelty is to combine different control parameters in an "all-in-one" product, allowing to manipulate speed limits, ramp metering, as well as to re-route cars based on the real-time situation on the highway. The system will be tested on the highways around Marseilles, France's second most populated city.

Researcher: Dr Paola Goatin
Host institution: Institut National de Recherche en Informatique et en Automatique (Inria)
Project: A Traffic Management Optimization platform for enhanced road network efficiency (TramOpt)
Initial grant: Traffic Management by Macroscopic Models (TRAM3)
ERC funding: €150,000

Online self-help against sleepless nights

Insomnia is the strongest and best modifiable risk factor for depression. Aiming at prevention of depression, Professor Eus van Someren's Proof of Concept project, derived from previous ERC-funded research on insomnia, will innovate online self-help training platforms treating insomnia in two ways. First, the new platform will integrate the usual cognitive behavioural approach with newer chronobiological modules. Second, integration with the sleepregistry.nl platform will allow for the best choice of modules given an individual's profile of traits.

Researcher: Prof. Eus JW van Someren
Host institution: Koninklijke Nederlandse Akademie van Wetenschappen (KNAW)
Project: Integrated Network of Sleep-Optimizing Modules for Norm-Informed Adaptive Behavioural, Environmental And Therapeutic Internet Training (INSOMNIA BEAT IT)
Initial grant: Insomnia's Negative Sequelae On Mood: from Neuroscience to Intervention in the Aged (INSOMNIA)
ERC funding: €150,000

Fog harvesting with new superhydrophobic materials

The rainfall in the Mediterranean has declined by up to 100 mm/year since 1950. Many countries are in dire need of innovations to supply clean water. The research conducted by of ERC grantee Athanasios Papathanasiou at the National Technical University of Athens prepared the ground for the development of affordable synthetic superhydrophobic surfaces that could collect water from fog in arid areas. Prof. Papathanasiou and his team plans to demonstrate the capabilities of the new method in fog harvesting, and in other applications, and find for it the optimum route to the market.

Researcher: Prof. Athanasios Papathanasiou
Host institution: National Technical University of Athens
Project: Commercialization of a novel method for fabricating cheap tailor–made superhydrophobic surfaces (HYDROPHO-CHEAP)
Initial grant: Roughness design towards reversible non- / full-wetting surfaces: From Fakir Droplets to Liquid Films (HYDROFAKIR)
ERC funding: €150,000

Web-based service to diagnose impaired speech

Speech impairment can hinder social interactions and education performance. In Germany alone some 400,000 people with neurological disorders have problems pronouncing words. Novel and specialised diagnostic methods exist, but few therapists have sufficient expertise in using them. A web-based service providing highly advanced analyses of impaired speech, developed by ERC grantee Jonathan Harrington at Ludwig-Maximilians University in Munich, is to offer low cost and rapid diagnosis even in remote places. In the long run, PhonLab, has the potential to provide speech therapists in disadvantaged areas of the world with easy access to state-of-the-art techniques for diagnosing speech impairments.

Researcher: Prof.Jonathan Harrington
Host institution: Ludwig-Maximilians University
Project: A clinical phonetics laboratory service (PhonLab): diagnostics of speech impairment via the web
Initial grant: Sound change and the acquisition of timing in speech (SCATS)
ERC funding: €150,000

Making oil pipelines more energy-efficient

If you laid out all the oil pipelines in worldwide, they would wrap around the Earth more than ten times. It's because pipelines are the most economical way to transport large quantities of hydrocarbon liquids. Even so, the annual pumping costs amount to tens of billions of euro. The faster you pump the more turbulence there is and the higher the frictional losses in the pipeline. In the course of his ERC project, Bjoern Hof from the Institute of Science and Technology Austria, designed a method to convert fully turbulent flows in pipes back to laminar, cutting friction losses by as much as 80%. Now, in cooperation with oil companies and pipeline operators he pushes this technology from the laboratory to practical real-world situations.

Researcher: Dr Bjoern Hof
Host institution: Institute of Science and Technology Austria
Project: Eliminating turbulence in oil pipelines (TURBOPOC)
Initial grant: Decoding the complexity of turbulence at its origin (TURBOFLOW)
ERC funding: €150,000