

**Prestigious grant HORIZON EUROPE - “BEATsep” will tackle long-term consequences of sepsis.**

The research consortium BEATsep, established by the Cellular and Molecular Immunoregulation (CMI) research team at the International Clinical Research Centre (ICRC), has been awarded a 6.9 million euro HORIZON EUROPE grant. The project entitled “Biomarkers established to stratify sepsis long-term adverse effects to improve patients’ health and quality of life (BEATsep) aims to define markers of poor recovery of patients after sepsis and septic shock. This will be achieved through the discovery of novel mechanisms and their markers predicting the decline of health-related quality of life after sepsis. Sepsis and septic shock, affecting up to 50 million people worldwide with mortality reaching 20%, leaves large cohorts of vulnerable patients suffering from long-term complications that affect their quality of life.

Sepsis and septic shock affects 50 million people worldwide and the mortality rates can reach 20%. Moreover, sepsis survivors suffer from long term and diverse complications that lower their quality of life. This is only the third project in the Research and Innovation category focusing on population health to be coordinated from the Czech Republic. *"The project is the result of our efforts over several years within the consortium and has the chance to understand better and fundamentally change the recovery of pediatric and adult patients who have suffered septic shock. We would not have been able to develop this project without the intensive administrative support at the ICRC,"* added Dr. Jan Frič, head of the CMI.

The BEATsep project will apply an interdisciplinary approach bringing together research and clinical teams working on specific aspects of the development, treatment and prevention of the long-term consequences of sepsis and its impact on patients' quality of life. Comprehensive clinical and research data generated during the project will be integrated using artificial intelligence algorithms into an easy-to-use predictive tool capable of identifying patients at high risk of complications. Furthermore, the consortium plans to design a tertiary prevention strategy to improve the recovery outcomes.

For the next five years, the consortium brings six European countries together in a joint mission to understand and fight the long consequences of sepsis.

The consortium is coordinated by ICRC-FNUSA and will consist of leading European institutions including: 1) CIML - Centre d'immunologie de Marseille-Luminy – (Aix-Marseille Université/CNRS/Inserm); 2) The Institute of Innate Immunity, at the Medical Faculty of the University of Bonn, Germany; 3) Faculty of Medicine at the Comenius University in Slovakia; 4) the Ludwig Boltzmann Institute for Traumatology, Vienna, Austria; 5) BioVariance GmbH, Germany; 6) Masaryk University, Brno, Czechia; 7) National Institute of Health, Prague, Czechia; 8) University of Galway and 9) APHM - Marseille Hospitals. BEATsep assembles renowned experts in immuno-metabolism and epigenetics, immunophenotyping, diagnostic research and several clinical teams treating adult and pediatric sepsis patients. "It has taken nearly two years of intensive preparation and networking to assemble the consortium. We

used the advantage of bringing together teams with whom we have been already collaborating on several other projects." says Dr. Marcela Hortová-Kohoutková from the CMI research group, who co-headed the project's preparation.

In total, 9 partners from renowned European research and clinical institutions and 1 commercial partner in six EU countries will be involved in the BEATsep. The project is an example of an innovative and successful combination of translational and clinical research, the know-how of several international scientists, and the collaboration between hospitals, universities and other scientific institutions.

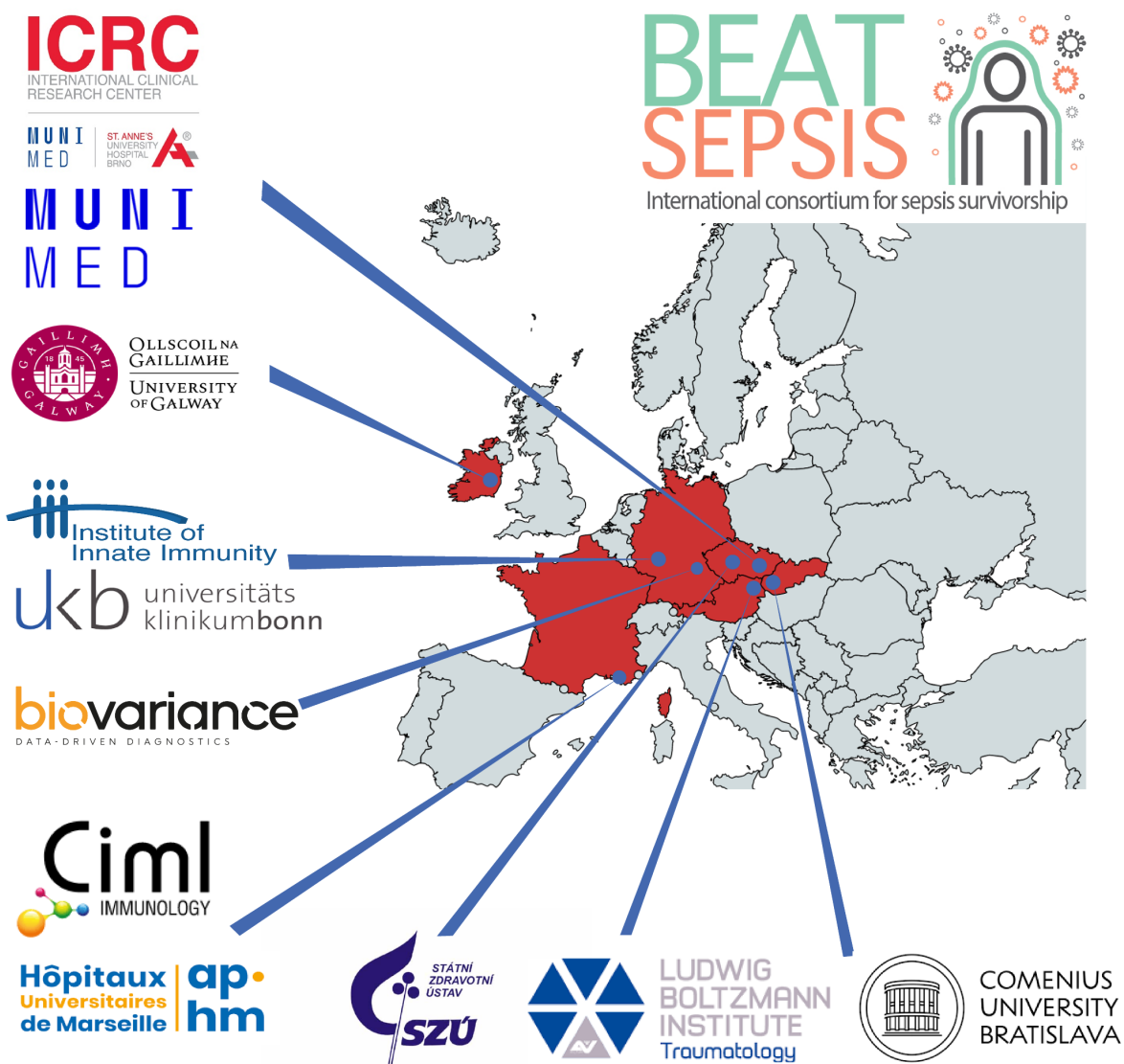
For more information and updates:

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*The International Clinical Research Centre (ICRC) is a joint facility of St. Anne's University Hospital in Brno and the Faculty of Medicine of Masaryk University.*



## **Funding of €6.9 Million for Sepsis Research**

*The European Union is providing funding for research on this lethal medical condition*

*Every year some 75,000 people die from bacterial blood poisoning, or sepsis, in Germany alone. Survivors of sepsis often have to struggle with secondary and concomitant conditions due to resulting impairment of the immune system, the so called “Immunesuppression”. The International Center for Clinical Research (ICRC) at St. Anne's University Hospital (FNUSA) Brno (Czech Republic) has founded the research consortium “BEATSep”. HORIZON EUROPA is funding it with around 6,9 million euros over the next five years. The project purpose is to study the cellular and molecular mechanisms causing this immune suppression occurring in sepsis survivors. Prof. Dr. Bernardo S. Franklin, Institute for Innate Immunity of the University Hospital Bonn and member of the ImmunoSensation<sup>2</sup> Cluster of Excellence of the University of Bonn, is involved in the project. He receives about 800,000 euros from the EU funding.*

*When the immune system is unable to contain an infection, or “overshoots”, and mounts an excessive inflammatory response against an infection, organ and tissue damage can occur. Known as septicemia or sepsis, this phenomenon has grave consequences, including multiple organ failure and potentially fatal septic circulatory shock, if not effectively treated in time. Worldwide, nearly 50 million people suffer from sepsis annually. In Germany alone, some 75,000 people die from the condition each year. “*

*Surviving sepsis patients often go on to suffer from a compromised immune system in consequence, leading to secondary illness and impaired health. “The molecular mechanisms that cause immunosuppression in the wake of sepsis are still largely unknown, nor is it currently possible to predict which patients will survive or develop immunosuppression,” explains Prof. Dr. Bernardo S. Franklin, who works at the Institute of Innate Immunity of the University Hospital Bonn and conducts research as a member of the University of Bonn's ImmunoSensation<sup>2</sup> Cluster of Excellence.*

*This is the focus of “BEATSep – International Consortium for Sepsis Survivorship”. Scientists from the Czech Republic, Slovakia, Ireland, Austria, France and Germany have joined to study the long-term immunological impact of septic shock as members of this consortium led by the Cellular and Molecular Immunoregulation (CMI) research team at the International Clinical Research Centre (ICRC) based in the Czech Republic. “The project has the chance to understand better and fundamentally change the recovery of pediatric and adult patients who have suffered septic shock,” says Dr. Jan Frič, head of the CMI team at ICRC. The ICRC is a joint facility of St. Anne's University Hospital in Brno and the Faculty of Medicine of Masaryk University.*

*The consortium's project is to receive approximately €6.9 million in European Union funding over the next five years, roughly €800,000 of which will flow to Professor Franklin's research group at the Institute for Innate Immunity. “We hypothesize that the post-sepsis immune suppression may be caused by antibodies raised against pathogens, but that cross-react*

with components of our own immune system, and neutralize the activities of immune cells. This ‘cross-fire’ may cause the immune dysfunction,” the scientist says. Using one of the biggest longitudinal cohort of sepsis patients in Europe, he and his team will investigate whether these “autoantibodies”, and dysregulation of inflammasomes, key signaling hubs of the innate immune system are causing the post-sepsis immunosuppression.

**Institutions involved:**

In addition to the Institute for Innate Immunity of the University Hospital Bonn and the ImmunoSensation<sup>2</sup> Cluster of Excellence of the University of Bonn, the following institutions are involved in the project led by the International Clinical Research Center (ICRC), based in the Czech Republic: Ludwig Boltzman Institute (Austria), BioVariance GmbH in Tirschenreuth (Bavaria), Centre d’Immunologie de Marseille-Luminy (France), Comenius University Bratislava (Slovakia), National University of Ireland and the Lung Biology Cluster (Ireland), Masaryk University Brno (Czech Republic), Assistance Publique – Hôpitaux de Marseille (France) and the National Institute of Health (Czech Republic).

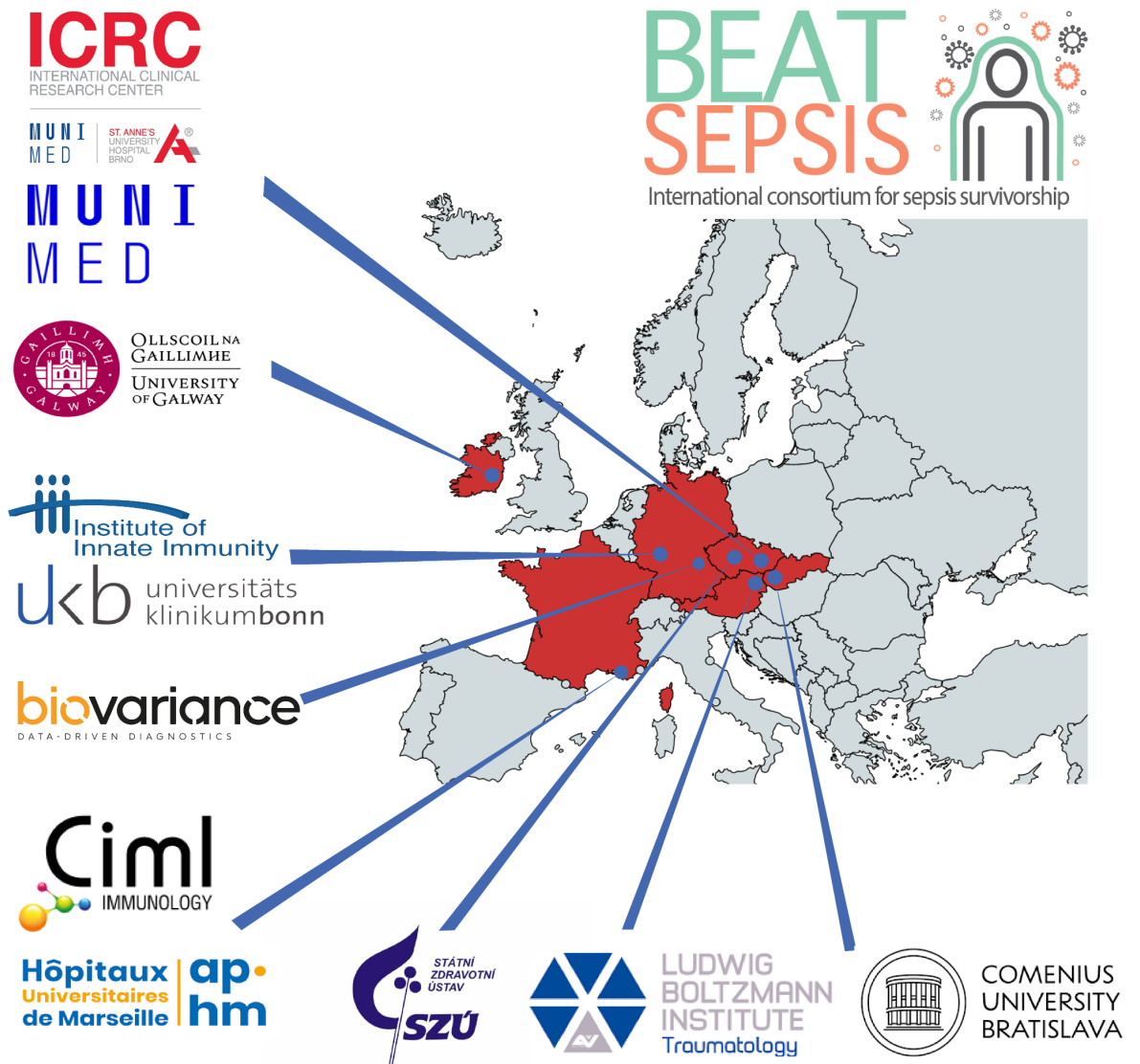
**For more information visit:** <https://www.beatsepsis.eu/>

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**Image line:**

**BernardoFranklin-137-BrunaGuerra.jpg:** Prof. Dr. Bernardo S. Franklin of the Institute of Innate Immunity. Photo: Bruna Guerra



*The members of the BEATSep consortium. Figure: BEATSep*

**BEATsep - prestižní evropský grant HORIZON EUROPE míří do Brna**

Výzkumnému týmu Buněčné a molekulární imunoregulace (CMI) Mezinárodního centra klinického výzkumu (ICRC) se podařilo získat prestižní mezinárodní grant HORIZON EUROPE. Projekt se zaměří na výzkum sepse a septického šoku, které ročně postihnou až 50 milionů lidí po celém světě a stojí téměř za 20% světových úmrtí. U většiny přeživších pacientů navíc dochází k rozvoji dalších komplikací, které mají vliv na kvalitu jejich života. Celkový rozpočet projektu BEATsep činí 6,9 milionů Euro.

Tento úspěch je ještě podtržen faktem, že CMI-ICRC projekt iniciovalo, následně sestavilo konsorcium partnerů, dále bude působit v pozici koordinátora celého projektu. Jde teprve o třetí projekt v kategorii Výzkum a inovace zaměřený na zdraví populace, který bude koordinovaný z ČR. *“Projekt je výsledkem našeho několikaletého úsilí v rámci konsorcia, dává šanci lépe pochopit a zásadně změnit rekonvalescenci dětských i dospělých pacientů kteří prodělali septický šok. Tento projekt bychom projekt nedokázali připravit bez intenzivní administrativní podpory, kterou máme v ICRC k dispozici”* doplnil Dr. Jan Frič, vedoucí CMI.

Projekt BEATsep bude využívat interdisciplinární přístup, který spojí výzkumné a klinické týmy zabývající se specifickými aspekty rozvoje, léčby a prevence dlouhodobých následků sepse a jejich vlivu na kvalitu života pacientů. Komplexní klinická a výzkumná data získaná během projektu budou s využitím algoritmů umělé inteligence integrována do snadno použitelného prediktivního nástroje schopného identifikovat pacienty s nejvyšším rizikem komplikací. Dále konsorcium plánuje navrhnout strategii terciární prevence, která by pomohla rozvoji takových následků předcházet.

Za tímto účelem vzniklo konsorcium, které bude tuto problematiku v následujících pěti letech řešit. Konsorcium spojuje renomované experty na imuno-metabolismus, imunofenotyp, výzkum diagnostických znaků a několik klinických týmů pečujících o dospělé i dětské pacienty se sepsí. *“Sestavení konsorcia, které již v současné době pracuje na několika společných projektech, zabralo bezmála dva roky intenzivních příprav a networkingu.”* říká Dr. Marcela Hortová-Kohoutková z výzkumné skupiny CMI, která se na přípravě projektu zásadně podílela.

Celkově bude do BEATsep projektu koordinovaného ICRC-FNUSA zapojeno 10 partnerů z 6 evropských zemí včetně 1) CIML - Centre d'immunologie de Marseille-Luminy – (Aix-Marseille Université/CNRS/Inserm); 2) The Institute of Innate Immunity, at the Medical Faculty of the University of Bonn, Germany; 3) Faculty of Medicine at the Comenius University in Slovakia; 4) the Ludwig Boltzmann Institute for Traumatology, Vienna, Austria; 5) BioVariance GmbH, Germany; 6) Masaryk University, Brno, Czechia; 7) National Institute of Health, Prague, Czechia; 8) University of Galway and 9) APHM - Marseille Hospitals. BEATsep spojí renomované experty na imunometabolismus, epigenetiku, imunofenotypizaci, diagnostický výzkum a několik klinických týmů pečujících o dětské i dospělé pacienty se sepsí. *“Projekt BEATsep je ukázkou inovativního a úspěšného propojení translačního a klinického výzkumu, know-how našich a mezinárodních vědců, a spolupráce mezi nemocnicemi, univerzitami a dalšími vědeckými institucemi, které mají renomé. Jsem hrdá*

na to, že koordinátorský tým je z ICRC, společného pracoviště Fakultní nemocnice u sv. Anny a Lékařské fakulty Masarykovy univerzity v Brně,” uvedla Prof. MUDr. Irena Rektorová, přednostka ICRC.

Pro více informací a aktuality @BEATsepsis (Twitter, X), [www.beatsepsis.eu](http://www.beatsepsis.eu), LinkedIn (<https://shorturl.at/isRZ9>)

Mezinárodní centrum klinického výzkumu (ICRC) je společným pracovištěm Fakultní nemocnice u sv. Anny v Brně a Lékařské fakulty Masarykovy univerzity.

## FRENCH RELEASE

### **Bourse prestigieuse HORIZON EUROPE 2023 - « BEATsep » et l'AP-HM s'attaqueront aux conséquences immunologiques du sepsis**

Le consortium de recherche européen « BEATsep », créé par des chercheurs en immunologie en République Tchèque (université St-Anne à Brno, faculté de médecine de Masaryk), a reçu une subvention HORIZON EUROPE à hauteur de 6,9 millions d'euros pour un projet Européen sur le sepsis.

« BEATsep » (“**B**iomarkers established to stratify **s**epsis long-term adverse effects to improve patients' health and quality of life”) est un projet de recherche visant à déterminer les modifications du système immunitaire qui surviennent et persistent à long terme après une infection grave (sepsis et choc septique). Le sepsis et le choc septique touchent jusqu'à 50 millions de personnes dans le monde avec une mortalité atteignant 20% et 50%, respectivement. Ces patients, enfants et adultes, sont hospitalisés en réanimation et l'amélioration de leur prise en charge passe par une meilleure compréhension de la maladie et de ses conséquences, et donc par des projets tels que « BEATsep ».

« BEATsep » est le fruit d'une collaboration européenne à laquelle participent les réanimations de l'AP-HM. Au sein de la Réanimation des Urgences de l'Hôpital de la Timone, le Docteur Julien Carvelli, coordonnateur du projet pour l'AP-HM, déclare qu'il s'agit d' « un projet exceptionnel au sein duquel l'AP-HM, Aix-Marseille Université et l'ensemble de ses chercheurs en réanimation pourront travailler main dans la main pour améliorer les connaissances au sujet des infections graves ». Au sein de la Réanimation Polyvalente de l'Hôpital Nord, le Professeur Marc Leone souligne qu'il s'agit d'un projet « qui permettra de

*mettre en lumière notre institution sur une thématique forte de notre spécialité ». Le service de réanimation pédiatrique du Professeur Fabrice Michel fait aussi partie de l'aventure.*

*Au cours des cinq prochaines années, le consortium réunira six pays européens et sera coordonné par le CICR-FNUSA (Université de Brno – République Tchèque). Il sera composé, avec l'AP-HM, d'autres institutions prestigieuses, notamment : 1) CIML - Centre d'immunologie de Marseille-Luminy (France) 2) Institut de l'immunité innée, faculté de médecine de l'Université de Bonn (Allemagne) 3) Faculté de médecine de l'Université Comenius (Slovaquie) 4) Institut Ludwig Boltzmann de traumatologie à Vienne (Autriche) 5) BioVariance GmbH (Allemagne) 6) Université Masaryk, de Brno (République Tchèque) 7) Institut national de la santé de Prague (République Tchèque) 8) Université de Galway (Irlande).*

*L'AP-HM est très heureuse de l'opportunité de participer à ce projet qui permettra, sans douter, une avancée dans la compréhension du sepsis, un syndrome associé à une mortalité encore trop élevée.*



## **EXAMPLE PRESS RELEASE SLOVAKIA:**

### ***Prestigious grant HORIZON EUROPE for BEATsep consortium to research the long-term consequences of sepsis***

**Despite the best efforts of modern medicine, sepsis remains a life-threatening condition and a leading cause of death among critically ill patients, with a global mortality rate reaching 20%. Survivors of sepsis often grapple with multiple health issues and an increased risk of further complications due to their compromised immune system. The BEATsep research consortium is dedicated to gaining a deeper understanding of the factors affecting the quality of life for sepsis survivors. We are delighted to announce the funding of our research project titled, 'Biomarkers established to stratify sepsis long-term adverse effects to improve patients' health and quality of life,' with a grant of approximately €6.9 million over the next five years to address this challenge. Based at the Faculty of Medicine at Comenius University in Bratislava, Slovakia our team will investigate alterations in the blood microenvironment and molecular mechanisms responsible for aberrant immune responses and neurological impairments in sepsis survivors. We will also actively engage in patient enrollment.**

Scientists from the Czech Republic, Germany, France, Ireland, Austria and Slovakia have joined to study the long-term immunological impact of septic shock as members of this consortium led by the Cellular and Molecular Immunoregulation (CMI) research team at the International Clinical Research Centre (ICRC) based in the Czech Republic. *“The project has the chance to understand better and fundamentally change the recovery of pediatric and adult patients who have suffered septic shock,”* says Dr. Jan Frič, head of the CMI team at ICRC. The ICRC is a joint facility of St. Anne's University Hospital in Brno and the Faculty of Medicine of Masaryk University. The consortium's project is to receive approximately €6.9 million in European Union funding over the next five years, roughly €700,000 of which will flow to scientists and clinicians at the Institute of Molecular Biomedicine, Department of Pediatrics and the Department of Emergency Medicine at the Faculty of Medicine, Comenius University in Bratislava, Slovakia.

As a prospective observational study, BEATsep will benefit from the recruitment of two different cohorts with sepsis - pediatric as well as adult, and Slovakia will participate in not just their enrollment but also in research of the consequences of this severe condition. *“We hypothesize that the post-sepsis alterations in immune homeostasis may be linked to a particular immune defense mechanism – extracellular traps formed during septic shock. Their remnants lingering in the body may engage our immune cells and potentially contribute to post-sepsis neurological impairments,”* explains Michal Pastorek from the Institute of Molecular Biomedicine.

The project is an example of an innovative and successful combination of translational and clinical research, the know-how of several international scientists, and the collaboration between hospitals, universities and other scientific institutions. In addition to the Institute of

Molecular Biomedicine at the Faculty of Medicine, Comenius University the following institutions are involved in the project led by the International Clinical Research Center (ICRC), based in the Czech Republic: Masaryk University Brno and the National Institute of Health (Czech Republic), Institute for Innate Immunity of the University Hospital Bonn and the ImmunoSensation Cluster of Excellence of the University of Bonn (Germany), Ludwig Boltzman Institute (Austria), Centre d'Immunologie de Marseille-Luminy and Assistance Publique – Hôpitaux de Marseille (France), National University of Ireland and the Lung Biology Cluster (Ireland) and BioVariance GmbH in Tirschenreuth (Bavaria).

**For more information visit: <https://www.beatsepsis.eu/>**

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*BEATsep image*