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## **Areas of scientific interest**

- **Research in allergic diseases and development of innovative immunotherapies**

The main research topics in the field are: (1) human dendritic cells response to pulsing with aeroallergens and pro-inflammatory mediators; (2) mechanisms of in vivo and in vitro allergic reactions in respiratory diseases; (3) assessment of bronchial remodelling.

The topics were developed within the first national study on the efficiency of prevention to exposure to aeroallergens in Romania (PREVALERG, 41-011/2007-2010). Based on the achieved results, I've started the study of allergic response to Ambrosia pollen in cooperation with the Medical University Vienna, which led to the INSPIRED research project, aiming to develop innovative diagnostic kits based on recombinant allergens. As a new research direction in the field of peptide-based immunotherapies development, we are implementing state-of-the-art *in silico* tools for prediction of allergen epitopes as novel candidates for allergen immunotherapy (AIT).

I also participated as PI in the clinical trial *Efficacy and safety of AVT-015 mg once daily over 7 days in patients with moderate persistent atopic asthma – A double-blind, randomized, placebo-controlled clinical study*, Protocol No AVT-01/2/AST/02, EUDRACT No 2006-004187-32, 2006.

- **Research in stem cell use for advanced therapies**

One focus in research is the development of advanced therapies based on adult human stem cells, with emphasis on bone repair. Within the EU funded projects GENOSTEM (FP6 - LSHB 1.1./503161/2003-2007) and CASCADE (FP7 - 223236/2009), the focus was on stem cell use for cell therapies in soft tissue defects. In REBORNE (FP7-241879/2009) we were involved in the development of clinical trials with human MSC for advanced therapies for bone regeneration in orthopaedics and traumatology. Our team was involved in the multinational multicentre clinical trial ORTHO2 - with clinical-grade bone marrow mesenchymal stromal/stem cells for bone regeneration, in partnership with universities and research centres from France, Italy, Germany and Spain.

- **Medical research ethics**

In the framework of CASCADE and REBORNE projects, our team has also conducted research on ethical, legal and regulatory issues in the field of stem cell use, particularly for advanced therapies. Moreover, our university was appointed leader of the respective workpackages dealing with medical research ethics in the aforementioned projects.

- **Artificial intelligence (AI) solutions for treatment and care**

I have participated as the main representative of the Pius Brinzeu County Clinical Emergency Hospital Timisoara, Romania, in international consortia targeting the implementation of AI in medical care. This

cooperation resulted in the creation of proposals for the Horizon 2020 programme focused on: (1) anticipation of the diagnosis of cancerous lesions in oncologic patients using texture analysis and other advanced approaches; prediction of treatment response to therapies for tumours; (2) integration of digitalized data, and development of AI-based technologies for hospitals of the future; (3) development of a Medical AI Platform that fuses Big data management, an interoperability language and a Medical Data Lake-to enable networked medical agencies share and exchange trusted and secure medical data-with innovative AI-driven personalised risk prediction, prevention and intervention models that facilitate preventive care.

- **Experience in evaluation of EU research proposals**

I participated as **independent expert** for **Ambient Assisted Living Joint Programme** since 2008, being also **rapporteur** for a part of the proposals in the AAL-2008-1 and AAL-2013 calls at EU level. I also participated as **Independent expert** for programme **Research potential, FP7-REGPOT-2010 and 2011** (2009-2011) and 2014-2015. I am a **COST expert** since 2010.

### **Main scientific publications**

1. Haidar L, Tamas TP, Stolz F, Patrascu RFP, C W, **Panaiteescu C**. Symptom patterns and comparison of diagnostic methods in ragweed pollen allergy. *Experimental and Therapeutic Medicine*. 2021; 21:525, DOI: 10.3892/etm.2021.9957.
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3. Cernescu LD, Haidar L, **Panaiteescu C**. Dendritic cell-CD4+ T cell interaction: The differential role of IL-4/IL-13 in serum IgE levels in house dust mite allergic patients. *Experimental and Therapeutic Medicine*. 2021 Jan 1;21(1):1-9. doi: 10.3892/etm.2020.9527
4. Bousquet J, Cristol P, Czarlewski W, the ARIA Group (**Panaiteescu Bunu C** et al). Nrf2-interacting nutrients and COVID-19: time for research to develop adaptation strategies. *Clinical and Translational Allergy*. 2020 10(1):58. doi: 10.1186/s13601-020-00362-7
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10. Bousquet J, Hellings PW, Agache I, the Mobile Airways Sentinel network M (**Panaiteescu C** et al). Allergic Rhinitis and its Impact on Asthma (ARIA) Phase 4 (2018): Change management in allergic rhinitis and asthma multimorbidity using mobile technology. *Journal of Allergy and Clinical Immunology*. 2019;143, 3: 864-879. doi: 10.1016/j.jaci.2018.08.049

11. Chen KW, Zieglmayer P, Zieglmayer R, Lemell P, Horak F, **Panaiteescu Bunu C**, Valenta R, Vrtala S. Selection of house dust mite–allergic patients by molecular diagnosis may enhance success of specific immunotherapy. *Journal of Allergy and Clinical Immunology*. 2019 Mar 1;143(3):1248-52
12. Gomez-Barrena E, Rosset P, Gebhard F, Hernigou P, Baldini N, Rouard H, Sensebe L, Gonzalo-Daganzo RM, Giordano R, Padilla-Eguiluz N, García-Rey E, Cordero-Ampuero J, Rubio-Surez JC, Stanovici J, Ehrnthaller C, Huber-Lang M, Flouzat-Lachaniette CH, Chevallier N, Donati DM, Ciapetti G, Fleury S, Fernandez MN, Cabrera JR, Avendano-Sola C, Montemurro T, **Panaiteescu C**, Veronesi E, Rojewski MT, Lotfi R, Dominici M, Schrezenmeier H, Layrolle P. Feasibility and safety of treating non-unions in tibia, femur and humerus with autologous, expanded, bone marrow-derived mesenchymal stromal cells associated with biphasic calcium phosphate biomaterials in a multicentric, non-comparative trial. *Biomaterials*. 2019 Mar 1;196:100-8. <https://doi.org/10.1016/j.biomaterials.2018.03.033>
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14. Tatu CS, **Panaiteescu C**, Marusciac L, Sisu AM, Cristea M, Puscasiu DA, Tanasie G. Adhesion and Secretory Profile of Mesenchymal Stem Cells Upon Contact with Some Biomaterials. *Revista de Chimie*. 2017 Sep 1;68(9):2079-82
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21. Ivan A, Ordodi V, Cean A, Ilie DE, **Panaiteescu C**, Tănăsie G. Comparative study of the differentiation potential of rat bone marrow mesenchymal stem cells and rat muscle-derived stem cells. *Archives of Biological Sciences*. 2013;65(4):1307-15. doi: 10.2298/ABS1304307I
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**Hirsch index 13** and a total of **667 citations (JULY 2021)**

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