

Dr. Carmen Muñoz-Almagro, MD, PhD, is Head of the Molecular Microbiology Department at University Children's Hospital Sant Joan de Déu (HSJD), Barcelona, Professor of Medicine at Universitat Internacional de Catalunya, President of the Catalan Society of Clinical Microbiology and Infectious Diseases and Team Leader of a consolidated research group. The Pediatric Infectious Research group led by Dr. Muñoz-Almagro is one of the research groups conforming the Instituto de Recerca Sant Joan de Déu and it is integrated into the Biomedical Research Networking Centers for Epidemiology and Public Health (CIBERESP). It includes a multi-disciplinary team of 16 investigators specialized in paediatrics, microbiology, bioinformatics, biostatistics and nursing. The group has 11 postdoctoral and 4 predoctoral researchers as well as 1 laboratory technician. Of them, 7 investigators are exclusively dedicated to research activities and hired with grants awarded to the group, while the rest are health care professionals that combine provision of health care in HSJD and research.

The group conducts research into the clinical, epidemiological and molecular aspects of the major paediatric infectious diseases using state-of-the-art instrumentation, including next generation sequencing technologies. The strong involvement of some group members in health care provision allows conducting translational research with the ultimate goal to improve diagnostics and benefit patients. The group leverages on a molecular microbiology laboratory led by the principal investigator of the group, who has a strong background in molecular diagnosis of major paediatric infectious diseases since 1994. The molecular microbiology laboratory provides diagnostic services to HSJD and Parc Sanitari Sant Joan de Déu, processing more than 15000 determinations of 50 different applications annually. Thanks to its broad portfolio of molecular techniques and rapid delivery of results, the laboratory also receives and processes samples from several public and private health centres.

The main research lines of the group are vaccine-preventable diseases, innovation in molecular microbiological diagnosis and human microbiome. Within the first research line, Dr. Muñoz-Almagro's laboratory acts as support laboratory for Agència de Salut Pública de Catalunya for molecular surveillance of *Streptococcus pneumoniae*, *Bordetella pertussis* and *Neisseria meningitidis*. They perform rapid identification of *S. pneumoniae* capsular type and pneumococcal clonal type of invasive strains received from more than 20 health centers throughout Catalonia by a multiplex PCR and fluorescent fragment analysis and by Multi Locus Sequence Typing (MLST), respectively. They also receive nasopharyngeal samples from more than 200 health centres for rapid identification of different *Bordetella* spp. and perform rapid serogroup identification of *N. meningitidis* by molecular methods. These activities imply their participation in different national and international research projects. Currently, the group is participating in two European projects funded by the international organization European Center for Disease Prevention and Control (ECDC). At the national level, the group has led 5 funded national health projects (FIS) since 2011, 3 of them focused on the study of Invasive Pneumococcal Disease, including the evaluation of the effectiveness of the 13-valent pneumococcal conjugate vaccine, the role of co-infection with respiratory viruses and the deficiency of Mannose-Binding Lectin as predisposing factors for infection by this microorganism.

The research line of diagnostics innovation aims to improve diagnosis and characterization of paediatric infectious diseases through the use of sensitive, specific, rapid, simple and cost-effective techniques. It is a continuously evolving line orientated to transfer the new technologies to the routine diagnostic activity of the laboratory. In this regard, the group has evaluated and validated different molecular point of care techniques for rapid diagnosis of different paediatric infectious diseases. To be also highlighted the role of the group as co-ordinators of an European project (RESPOC) funded by the Seventh Framework Program of the European Commission for the development of a molecular Point of Care technique for rapid diagnosis of the pathogens *B. pertussis* and *S. pneumoniae*, etiological agents of two major respiratory diseases in children. Recently, and integrated into the diagnostics innovation line, the group has obtained four funded national projects about human microbiome using Next Generation Sequencing, the most forefront technology in the field. In this area, the group is conducting a project to study the protective or predisposing risk effect of the nasopharyngeal microbiota in the production of lower respiratory tract infections with promising results.

Both research lines have been a source of knowledge for scientific progress in the specific fields. Dr. Muñoz-Almagro has published more than 180 scientific papers and lead 10 doctoral theses.