

## PhD Project Description

<b>School/Department:</b>	<b>Department of Cardiology, section electrophysiology, Erasmus MC</b>
<b>Supervisor information:</b>	<p>1. Prof dr. Natasja MS de Groot  2. Email: <a href="mailto:n.m.s.degroot@erasmusmc.nl">n.m.s.degroot@erasmusmc.nl</a>  Website: <a href="https://www.linkedin.com/in/prof-dr-natasja-de-groot-md-phd-emc-65760662/">https://www.linkedin.com/in/prof-dr-natasja-de-groot-md-phd-emc-65760662/</a>  <a href="https://www.erasmusmc.nl/en/research/researchers/groot-natasja-de">https://www.erasmusmc.nl/en/research/researchers/groot-natasja-de</a>  <a href="https://www.medicaldelta.nl/onderzoek/medical-delta-cardiac-arrhythmia-lab">https://www.medicaldelta.nl/onderzoek/medical-delta-cardiac-arrhythmia-lab</a>  <b>Grants:</b> EU-LSH, Dutch-German Heart Foundation grant, Cardiovascular research Netherlands, personal grants: Dutch Heart Foundation Junior Staffmember, VIDI; multiple companies (e.g. Johnson&amp;Johnson, Bayer) <b>Most important publications:</b> Zhang, D., et al. (2019) <i>Nature Communications</i>, Calkins, H., Heart Rhythm, de Groot, N., (2016) <i>Circulation-Arrhythmia and Electrophysiology</i>; Knol, W. G., et al. (2019). <i>Heart Rhythm</i>, Starreveld, R., (2019) <i>Europace</i>, Kharbanda R. (2020) <i>JACC EP</i>.</p>
<b>Project Title:</b>	<b>Innovation in Diagnosis and Therapy of Cardiac Arrhythmias</b>
<b>Abstract:</b>	<p>Our projects are aimed at unravelling the pathophysiology of complex cardiac tachyarrhythmias, developing and testing developing novel diagnostic tools (in close collaboration with Technical university Delft) and therapies for cardiac arrhythmias. Main topics are high resolution mapping studies of cardiac arrhythmias in particular atrial fibrillation, unravelling mechanisms of (post-operative) atrial fibrillation, dysrhythmias in patients with congenital heart disease and neuromodulation of atrial fibrillation. For this purpose, we have developed a unique way of recording and processing cardiac signals to perform mapping procedures in the surgical rooms and catheterization laboratory.</p> <p>Our innovative scientific contributions include: discovery of novel mechanisms underlying persistence of atrial fibrillation, introduction endovascular mapping approach guiding ablative therapy of atrial tachyarrhythmias in patients with congenital heart disease, development of a novel, intra- operative epicardial mapping approach, discovery of the role of Bachmann's bundle in development of atrial tachyarrhythmias, performed worldwide the first high resolution mapping studies in pediatric patients, discovery conduction properties in pediatric patients with congenital heart disease.</p> <p>In our cardiac bio-electricity lab, we combine expertise of developmental biology, cardiac electrophysiology with macro- and microscopic cardiac morphology. We perform clinical and experimental studies in surgical rooms, EP labs, outpatient clinic and animal lab, including langendorfer set ups. We have several multi-disciplinary collaborations (e.g. electrical, biomechanical engineering and molecular biology).</p>  <p><b>Keywords:</b> cardiac surgery, electrophysiology laboratory, biomarkers, human-, animal-, clinical-, experimental mapping studies, electrical activity, ECG analysis, electrograms, biomarkers and medical technology.</p>
<b>Requirements of candidate:</b>	<ul style="list-style-type: none"> <li>We are looking for a highly motivated, hardworking student to join our very international team. Our strength is in using team work to tackle large scientific questions and thus requires a student with good communication skills.</li> <li>Master degree or MD</li> <li>Scholarship that will, at least, cover subsistence allowance and international air plane ticket (we could help with the scientific part of your scholarship proposal)</li> <li>English language requirement: <ul style="list-style-type: none"> <li>English speaking countries &amp; Netherlands: no requirement</li> <li>Other countries: IELTS 7.0 (min 6.0 for all subs), TOEFL 100 (min 20 for all subs)</li> </ul> </li> </ul>

Application requirements & Deadlines:

<https://www.eur.nl/en/about-eur/erasmus-university-china-centre/csc-scholarship>

Erasmus MC, ranked world

\* No.32 for Clinical Medicine US News 2020:

<https://www.usnews.com/education/best-global-universities/clinical-medicine?page=3>

\* No. 30 Nature Index for Biomedical Sciences 2019:

<https://www.natureindex.com/supplements/nature-index-2019-biomedical-sciences/tables/healthcare>