

Sauer, Igor Maximilian, Prof., MD, PhD (Z01)

Personal Data

Title	Prof. Dr. med.
First name	Igor Maximilian
Name	Sauer
Current position	Full Professor for Experimental Surgery and Regenerative Medicine (W2), Charité – Universitätsmedizin Berlin, Campus Charité Mitte (CCM) and Campus Virchow-Klinikum (CVK); permanent position
Current institution(s)/site(s), country	Charité – Universitätsmedizin Berlin, Experimental Surgery, Department of Surgery, Charité – Universitätsmedizin Berlin, Campus Charité Mitte (CCM) and Campus Virchow-Klinikum (CVK), Augustenburger Platz 1, 13353 Berlin, Germany
Identifiers/ORCID	ORCID-ID: 0000-0001-9355-937X

Qualifications and Career

Stages	Periods and Details
Degree programme: Medicine	1989 – 1996, Freie Universität (FU) Berlin, Berlin, Germany and Humboldt Universität (HU), Berlin, Germany
Doctorate: MD thesis	18.12.1998: Supervisor: Emil Sebastian Bücherl, “ <i>A totally implantable artificial heart: Development and in vitro evaluation of a new type of electromechanical energy converter based on the principle of a unidirectional moving motor</i> ”, Surgery, Universitätskrankenhaus Rudolf Virchow, Freie Universität Berlin, Germany
Doctorate: PhD thesis	2008: Supervisor: Peter Neuhaus, “ <i>Innovative therapeutic strategies in liver failure – artificial, bioartificial and biological liver support concepts</i> ”, Surgery, Charité – Universitätsmedizin Berlin, Germany
Stages of academic / professional career	
Since 2019	Deputy Director of the Department of Surgery, Charité – Universitätsmedizin Berlin, Campus Charité Mitte (CCM), Campus Virchow-Klinikum (CVK), Berlin, Germany
2018	Full Professorship (W2) for Experimental Surgery and Regenerative Medicine at Charité – Universitätsmedizin Berlin, Germany
2016 – 2019	Chief consultant (Leitender Oberarzt) at the Department of Surgery, Charité – Universitätsmedizin Berlin, Campus Charité Mitte (CCM), Campus Virchow Klinikum (CVK), Berlin, Germany
2014	Professorship (APL), Charité – Universitätsmedizin Berlin, Germany

2011 – 2016	Consultant (Oberarzt) at the Department of General, Visceral and Transplantation Surgery, Campus Virchow Klinikum, Charité – Universitätsmedizin Berlin, Germany
2007	Board certification <i>General Surgery</i>
1998 – 2011	Resident Surgeon, Department of General, Visceral and Transplantation Surgery, Charité – Universitätsmedizin Berlin, Campus Virchow Klinikum, Germany
1997 – 1998	Resident Surgeon, Department of Abdominal and Transplantation-Surgery, Medizinische Hochschule Hannover, Germany
1993	Research fellowship at Baylor College of Medicine, Department of Surgery (Prof. Nosé's artificial heart research group, Houston, USA)

Engagement in the Research System

- Member of the Executive Board, Cluster of Excellence Matters of Activity. Image Space Material (DFG EXC2025), Humboldt-Universität (HU) Berlin (since 2023)
- Member of Charité Research Commission/Forschungskommission (since 2022)
- Head of the BIH Charité Digital Clinician Scientist Program (since 2021)
- Member of Steering Committee BIH Translation Hub – Organoids and Cell Engineering (since 2020)
- Principal Investigator, Cluster of Excellence “Matters of Activity. Image Space Material” (DFG EXC2025), Humboldt-Universität (HU) Berlin (since 2019)
- Member of Charité Extraordinary Professorship Board/APL-Kommission (since 2019)
- Member of Charité Animal Welfare Committee/Tierschutzausschuss (2017 – 2023)
- Organizer of the 24th International Congress of The Transplantation Society in Berlin (2012)
- Organizer of the 18th Annual Conference of the German Transplantation Society (DTG) in Berlin (2009)
- Organizer of the “One Day on the Liver” during the annual meetings of the European Society for Artificial Organs (ESAO) in 2004 (Warsaw), 2005 (Bologna), 2006 (Umeå), 2007 (Krems), 2008 (Geneva), 2009 (Compiègne), and 2010 (Skopje) (2004 – 2010)

Scientific Results

Category A, * contributed equally, # open access

1. Elomaa L, Gerbeth L, Almalla A, Fribicz N, Daneshgar A, Tang P, Hillebrandt K, Seiffert S, **Sauer IM**, Siegmund B, Weinhart M. Bioactive photocrosslinkable resin solely based on refined decellularized small intestine submucosa for vat photopolymerization of in vitro tissue mimics. **Additive Manufacturing** 2023; 64:103439. <https://doi.org/10.1016/j.addma.2023.103439>
2. Snellings J, Keshi E, Tang P, Daneshgar A, Willma EC, Haderer L, Klein O, Krenzien F, Malinka T, Asbach P, Pratschke J, **Sauer IM**, Braun J, Sack I, Hillebrandt K. Solid fraction determines stiffness and viscosity in decellularized pancreatic tissues. **Biomater Adv** 2022; 139: 212999. doi: 10.1016/j.bioadv.2022.212999.
3. Everwien H, Keshi E, Hillebrandt KH, Ludwig B, Weinhart M, Tang P, Beierle AS, Napierala H, Gassner JM, Seiffert N, Moosburner S, Geisel D, Reutzel-Selke A, Strücker

- B, Pratschke J, Haep N, **Sauer IM**. Engineering an endothelialized, endocrine Neo-Pancreas: Evaluation of islet functionality in an *ex vivo* model. **Acta Biomater** 2020; 117: 213-225. doi: 10.1016/j.actbio.2020.09.022.
4. Daneshgar A, Klein O, Nebrich G, Weinhart M, Tang P, Arnold A, Ullah I, Pohl J, Moosburner S, Raschzok N, Strücker B, Bahra M, Pratschke J, **Sauer IM**, Hillebrandt K. The human liver matrisome - Proteomic analysis of native and fibrotic human liver extracellular matrices for organ engineering approaches. **Biomaterials** 2020; 257:120247. doi: 10.1016/j.biomaterials.2020.120247.
 5. Claussen F, Gassner JMGV, Moosburner S, Wyrwal D, Nösser M, Tang P, Wegener L, Pohl J, Reutzel-Selke A, Arsenic R, Pratschke J, **Sauer IM**, Raschzok N. Dual versus single vessel normothermic *ex vivo* perfusion of rat liver grafts using metamizole for vasodilatation. **PLoS One** 2020; 15(7): e0235635. doi: 10.1371/journal.pone.0235635. #
 6. Elomaa L, Keshi E, **Sauer IM**, Weinhart M. Development of GelMA/PCL and dECM/PCL resins for 3D printing of acellular *in vitro* tissue scaffolds by stereolithography. **Mater Sci Eng C Mater Biol Appl** 2020; 112: 110958. doi: 10.1016/j.msec.2020.110958.
 7. Nösser M, Gassner JMGV, Moosburner S, Wyrwal D, Claussen F, Hillebrandt KH, Horner R, Tang P, Reutzel-Selke A, Polenz D, Arsenic R, Pratschke J, **Sauer IM**, Raschzok N. Development of a rat liver machine perfusion system for normothermic and subnormothermic conditions. **Tissue Eng Part A** 2020; 26(1-2): 57-65. doi: 10.1089/ten.TEA.2019.0152.
 8. Moosburner S, **Sauer IM**, Gassner JMGV, Schleicher C, Bösebeck D, Rahmel A, Pratschke J, Raschzok N. Macrosteatosis is a huge problem in liver transplantation-however, not the only one we face. **Am J Transplant** 2019; 19(9): 2661-2662. doi: 10.1111/ajt.15418. #
 9. Napierala H, Hillebrandt KH, Haep N, Tang P, Tintemann M, Gassner J, Noesser M, Everwien H, Seiffert N, Kluge M, Teegen E, Polenz D, Lippert S, Geisel D, Reutzel Selke A, Raschzok N, Andreou A, Pratschke J, **Sauer IM**, Struecker B. Engineering an endocrine Neo-Pancreas by repopulation of a decellularized rat pancreas with islets of Langerhans. **Sci Rep** 2017; 7: 41777. doi: 10.1038/srep41777. #
 10. **Sauer IM**, Goetz M, Steffen I, Walter G, Kehr DC, Schwartlander R, Hwang YJ, Pascher A, Gerlach JC, Neuhaus P. *In vitro* comparison of the molecular adsorbent recirculation system (MARS) and single-pass albumin dialysis (SPAD). **Hepatology** 2004; 39(5): 1408-1414. doi: 10.1002/hep.20195.

Selected Patents

1. "Antriebsvorrichtung für ein künstliches Herz / Artificial heart driving device / Dispositif d'entraînement pour coeur artificiel" European Patent EP 0 808 183 B1, US Patent USA 08/875974, Deutsches Patent 195 05 512, **Sauer IM**, Frank J, Spiegelberg A, Bücherl ES
2. „Vorrichtung zur Durchtrennung von Gewebeteilen, Device for separating tissue parts“ US Patent USA 11,013,512 B2, Deutsches Patent 102015113307.5 Japan 2021-135368, Fikatas P, **Sauer IM**, Bahra M

Collaborators

No.	Collaboration partners	Location/Institution
1	Birgit Sawitzki	Berlin, Germany, Berlin Institute of Health (BIH)

2	Alejandro Soto-Gutiérrez	Pittsburgh, USA, University of Pittsburgh
3	Stefan G. Tullius	Boston, USA, Harvard Medical School
4	Marie Weinhart	Hannover, Germany, Leibniz Universität
5	Josef A. Käs	Leipzig, Germany, Leipzig University
6	Ingolf Sack	Berlin, Germany, Charité – Universitätsmedizin Berlin
7	Simone Spuler	Berlin, Germany, Max Delbrück Center
8	Andreas Pascher	Münster, Germany, Universitätsklinikum Münster
9	Benjamin Strücker	Münster, Germany, Universitätsklinikum Münster
10	Andreas Birkenfeld	Tübingen, Germany, Medizinische Fakultät

Fields of Research

No.	Fields of research
1	205-25 General and Visceral Surgery
2	406-02 Biomaterials
3	205-32 Medical Physics, Biomedical Technology