Dr. Md. Mahbubur Rahman

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House 20, Road 04, Sector 10, Uttara,

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Current Position

Professor, Department of Pharmaceutical Sciences North South University, Dhaka-1229, Bangladesh

Researcher h-index: 21 Total citations: 3377

Current Research Focus and Fundings

Focus: Inflammation at the brain interface Projects:

- 1. The molecular mechanism(s) of Cerebral Ischemia in a mouse model of Stroke
- 2. Cellular signaling in Autism Spectrum Disorder (ASD)
- 3. The inflammatory mechanism in Parkinson's Diseases
- 4. Neuronal plasticity in the context of Alzheimer's Diseases

Research Grants

International Research Grant:

1. The World Academy of Science (TWAS) Research Grant (Individual), 2016

National Research Grant:

- 1. Bangladesh Ministry of Education grants for advanced research, 2018
- 2. North South University research grant, 2018
- 3. North South University research grant, 2019
- 4. North South University research grant, 2020
- 5. North South University research grant, 2022
- 6. North South University research grant, 2024

Academic Track Record

17th Sep 2013	Doctor of Science (Dr. rer. nat), Neuroscience, University of Heidelberg, Germany
2008	M.S. in Pharmaceutical Sciences, Department of Pharmacy, Jahangirnagar University, Dhaka, Bangladesh (2005, held in 2008), 1st Class and 1st Position in order of merit.
2006	Bachelor of Pharmacy (Hons.), Department of Pharmacy, Jahangirnagar University, Dhaka, Bangladesh (2004, held in 2006), 1st Class and 1st Position in order of merit.
1999	Higher Secondary Certificate, Dhaka College, Dhaka Board, Bangladesh, First division* (75.2%)
1997	Secondary School Certificate, Naogaon K.D Govt. High School, Rajshahi Board, Bangladesh, First division* (85.9%)

Teaching Experience

2023-present	Professor, Department of Pharmaceutical Sciences, North South University
2018-2023	Associate Professor, Department of Pharmaceutical Sciences, North South University
2014-2018	Assistant Professor, Department of Pharmaceutical Sciences, North South University
2013-2014	Assistant Professor (Part-time), Department of Pharmaceutical Sciences, NSU
2011-2013	Lecturer (Part-time), Institute of Experimental Pharmacology and Clinical Toxicology University of Lübeck, Germany
2007-2009	Lecturer, Department of Pharmacy, Northern University, Bangladesh

Administrative Experience

2023-2024	Chairman, Department of Pharmaceutical Sciences, North South University
2022- present	Chairman, Institutional Animal Care and Use Committee (IACUC), NSU
2022- present	Member, Institutional Review Board (IRB), North South University
2020- 2021	Coordinator (Professional Development), Institutional Quality Assurance Cell

Professional Experiences

Pharmacist Registration Number: A-2829 (Bangladesh Pharmacy Council)

Organization: Eskayef (Former SK + F) Bangladesh Limited

Period: 13th July 2006 to 13th July 2007

Position: Production Pharmacist

Reviewer of Research Journals:

Frontiers in Pharmacology

Awards and Honors

2021	Merck Bangladesh Life Science Award 2021, Champion
2021	Merck South East Asia Life Science Award 2021, Runner UP
2016	The World Academy of Science (TWAS) research grant
2009	ERASMUS MUNDUS Ph.D. scholarship
2005	University Grant Commission (UGC) Bangladesh Scholarship, Jahangirnagar University (highest scorer in faculty of Biological Sciences)
2004	Shahid Mohammad Hakim Foundation Scholarship" (highest scorer in faculty of Biological Sciences)
1998	National Merit Scholarship, Government of Bangladesh, Dhaka Board of Intermediate and Secondary Education, Bangladesh

Research Experience

1. Animal Models of Neurodegenerative disorders

- Animal model of cerebral ischemia (Stroke)
- Animal model of multiple sclerosis (EAE)
- Animal model of Autism Spectrum Disorder (ASD)
- Animal model of Parkinson's disease
- Animal model of Alzheimer's disease
- Animal model of Schizophrenia

2. Flow cytometry

- 3. Microscopy
 - Light microscopy, Confocal, and fluorescence microscopy
- 4. Adeno-associated viral techniques
- 5. Real-time RT-PCR
- 6. Brain staining techniques
 - Immunohistochemistry, Luxol fast- blue, Hematoxylin and eosin, silver staining, congo red,
 Golgi -Cox, and iron staining

7. Assay

- ELISA, various oxidative stress parameters
- 8. Mouse bone marrow transplantation
- 9. Basic cell culture-based experiments
- 10. Mouse breeding and colony management

Training Experience

2006 In-plant Training, Essential Drugs Company Limited

Completed in-plant training in Essential Drugs Company Ltd. from April 02, 2006 to April 30, 2006, on various aspects of pharmaceutical manufacturing, product development, quality control, storage, packaging, and management.

Language Proficiency

- Good oral and written command of English
- A1 certificate course in the German Language

Proficiency in Micro-computers

Application Package:

- Ms-Office
- Statistical analysis software (Sigma plot, Sigma Stat, Graph Pad Prism),
- Microscopic data analyzing software (Image J, Lyca picture analyzing tools),
- FACS analysis software (Flowjo)
- Photo editing tools (Adobe Illustrator, Photoshop, GIMP), and
- EndNote Reference Manager.

Online tools: Primer design by various online utility tools (NCBI Gene, ENSEMBLE, Oligo Calculator)

Networking: Internet, Intranet, Advanced Web Browsing

Personal Query

Name: Md. Mahbubur Rahman
 Father's Name: Md. Mozibar Rahman

Mother's Name: Mahmuda Begum

• Permanent Address: Sheba Asram Road, Bangabaria, Naogaon-6500, Bangladesh

Date of Birth: 15th February, 1983
 Nationality: Bangladeshi (by birth)

• Religion: Islam (sunni)

Marital Status: Married

Blood group: "O" Positive

Publications

Please see enclosed

References

1. Prof. Markus Schwaninger

Director, Institute of Experimental and Clinical Pharmacology and Toxicology, University of Lübeck, Ratzeburger Allee 160, 23562 Lübeck, Germany

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<u>markus.schwaninger@pharma.uni-</u>luebeck.de

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2. Prof. Walter Raasch

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luebeck.de

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Signature

Dr. Md. Mahbubur Rahman

List of Publications

2025

 Rahaman MM, Akter S, Asrafie S, U ZZ, Rafsan R, Sadique A, Alam J, Khan F, Tonny NH, Hossain R, Rahman MM, Zisan AN, Billah MB, Uddin KM, Rahman MM, Ahmed O, Shams F, Sharmin A, Hossain MM, Hossain M. Draft genome sequence of Pseudomonas aeruginosa strain NGMBE-25A isolated from fecal samples of migratory birds at Jahangirnagar University, Bangladesh. Microbiol Resour Announc. 2025 Jun 9:e0116024.

doi: 10.1128/mra.01160-24. Epub ahead of print. PMID: 40488493.

2024

- Zaman, B., Mostafa, I., Hassan, T., Ahmed, S., Esha, N. J. I., Chowdhury, F. A., ... & Rahman, M. (2024). Tolperisone hydrochloride improves motor functions in Parkinson's disease via MMP-9 inhibition and by downregulating p38 MAPK and ERK1/2 signaling cascade. Biomedicine & Pharmacotherapy, 174, 116438.
- Rahman, A., Akter, S., Sadique, A., Alam, J., Asrafie, S., Tabassum, A., Hossain, S.A., Rahman, M.M., Billah, M.B., Huq, T.S. and Uddin, K.M., 2024. Whole genome sequence of denitrifying bacterium Stutzerimonas stutzeri strain NGHE31, collected from an eutrophic wetland in Sunamganj, Bangladesh, following the 2017 flash floods. Microbiology Resource Announcements, 13(4), pp.e00001-24.
- Masum AA, Aoki S, Rahman MM, Hisamatsu Y. Chemical synthetic approaches to mimic the TRAIL: promising cancer therapeutics. RSC Med Chem. 2024 Aug 1. doi: 10.1039/d4md00183d. Epub ahead of print. PMID: 39246747; PMCID: PMC11376135.
- 5. Shariare MH, Mannan M, Khan F, Sharmin A, Attwa MW, Rahman AM, Rahman M, Uddin MN, Kazi M. Phospholipid-based nano drug delivery system of curcumin using MSP1D1 protein and poloxamer 407: A comparative study for targeted drug delivery to the brain. Journal of Nanoparticle Research. 2024 Jan;26(1):12.

2023

6. Ahmed, S., Abir, A.H., Sharmin, O., Khurshid, N., Akter, A., Nakshy, N.T., Hasan, M.M., Yesmine, S. and Rahman, M., 2023. Modulation of PI3K/Akt/GSK3β signaling cascade through G protein-coupled receptor 55 (GPR55) activation: prenatal lysophosphatidylinositol attenuates valproic acid-induced synaptic abnormalities and mitochondrial dysfunction. *Life Sciences*, 334, p.122195.

- 7. Sharmin O, Abir AH, Potol A, Alam M, Banik J, Rahman AT, Tarannum N, Wadud R, Habib ZF, **Rahman M** (2020) Activation of GPR35 protects against cerebral ischemia by recruiting monocyte-derived macrophages. Scientific Reports 10:1-13.
- 8. Shariare MH, **Rahman M**, Lubna SR, Roy RS, Abedin J, Marzan AL, Altamimi MA, Ahamad SR, Ahmad A, Alanazi FK (2020) Liposomal drug delivery of Aphanamixis polystachya leaf extracts and its neurobehavioral activity in mice model. Scientific Reports 10:1-16.
- 9. **Rahman MM**, Chakraborti RR, Potol MA, Abir A.H., Sharmin O, Alam M, Khan M.F.R., Afrin R, Jannat H, Wadud R (2020) Epalrestat improves motor symptoms by reducing oxidative stress and inflammation in the reserpine induced mouse model of Parkinson's disease. Animal Models and Experimental Medicine 3:9-21.

2019

10. Shariare MH, Altamimi MA, Marzan AL, Tabassum R, Jahan B, Reza HM, **Rahman M**, Ahsan GU, Kazi M (2019) In vitro dissolution and bioavailability study of furosemide nanosuspension prepared using design of experiment (DoE). Saudi pharmaceutical journal: S.P.J.: the official publication of the Saudi Pharmaceutical Society 27:96-105.

2017

- 11. Rushmi ZT, Akter N, Mow RJ, Afroz M, Kazi M, de Matas M, **Rahman M**, Shariare MH. The impact of formulation attributes and process parameters on black seed oil loaded liposomes and their performance in animal models of analgesia. Saudi Pharmaceutical Journal. 2017 Mar 1;25(3):404-12.
- 12. Al Mamun A, Hossain M, Uddin MS, Islam MT, Hossain S, Hossain MS, Hossain MF, Sujan AR, Rashid M, **Rahman MM**, Rahman AT. Comparison of the Hypoglycemic, Hypolipidemic and Hepatoprotective Effects of Asparagus racemosus Linn. in Combination with Gliclazide and Pioglitazone on Alloxan-Induced Diabetic Rats. Pharmacology & Pharmacy. 2017 Feb 13;8(02):52.

- 13. Maysami S, Wong R, Pradillo JM, Denes A, Dhungana H, Malm T, Koistinaho J, Orset C, **Rahman M**, Rubio M, Schwaninger M. A cross-laboratory preclinical study on the effectiveness of interleukin-1 receptor antagonist in Stroke. Journal of Cerebral Blood Flow & Metabolism. 2016 Mar;36(3):596-605.
- 14. Al-Amin MM, Sultana R, Sultana S, **Rahman MM**, Reza HM. Astaxanthin ameliorates prenatal LPS-exposed behavioral deficits and oxidative stress in adult offspring. B.M.C. neuroscience. 2016 Dec;17(1):11.

- 15. Alam MA, Subhan N, Hossain H, Hossain M, Reza HM, **Rahman MM**, Ullah MO. Hydroxycinnamic acid derivatives: a potential class of natural compounds for the management of lipid metabolism and obesity. Nutrition & metabolism. 2016 Dec;13(1):27.
- 16. Reza HM, Tabassum N, Sagor MA, Chowdhury MR, **Rahman M**, Jain P, Alam MA. Angiotensin-converting enzyme inhibitor prevents oxidative stress, inflammation, and fibrosis in carbon tetrachloride-treated rat liver. Toxicology mechanisms and methods. 2016 Jan 2;26(1):46-53.

- 17. Sagor AT, Chowdhury MR, Tabassum N, Hossain H, **Rahman MM**, Alam MA. Supplementation of fresh ucche (Momordica charantia L. var. muricata Willd) prevented oxidative stress, fibrosis and hepatic damage in CCl 4 treated rats. B.M.C. complementary and alternative medicine. 2015 Dec;15(1):115.
- 18. Al-Amin MM, **Rahman MM**, Khan FR, Zaman F, Reza HM. Astaxanthin improves behavioral disorder and oxidative stress in prenatal valproic acid-induced mice model of autism. Behavioural brain research. 2015 Jun 1;286:112-21.
- 19. Alam MA, Uddin R, Subhan N, **Rahman MM**, Jain P, Reza HM. Beneficial role of bitter melon supplementation in obesity and related complications in metabolic syndrome. Journal of lipids. 2015;2015.

- 20. **Rahman M**, Muhammad S, Khan MA, Chen H, Ridder DA, Müller-Fielitz H, Pokorná B, Vollbrandt T, Stölting I, Nadrowitz R, Okun JG. The β-hydroxybutyrate receptor H.C.A. 2 activates a neuroprotective subset of macrophages. Nature communications. 2014 May 21;5:3944
- 21. Heinonen AM, **Rahman M**, Dogbevia G, Jakobi H, Wölfl S, Sprengel R, Schwaninger M. Neuroprotection by rAAV-mediated gene transfer of bone morphogenic protein 7. B.M.C. neuroscience. 2014 Dec;15(1):38.
- 22. Chen H, Assmann JC, Krenz A, **Rahman M**, Grimm M, Karsten CM, Köhl J, Offermanns S, Wettschureck N, Schwaninger M. Hydroxycarboxylic acid receptor 2 mediates dimethyl fumarate's protective effect in E.A.E. The Journal of clinical investigation. 2014 May 1;124(5):2188-92.
- 23. Al-Amin MM, Hasan SN, Alam T, Hasan AT, Hossain I, Didar RR, Alam MA, **Rahman MM**. Tadalafil enhances working memory, and reduces hippocampal oxidative stress in both young and aged mice. European journal of pharmacology. 2014 Dec 15;745:84-90.
- 24. Alam MA, Rahman MM. Mitochondrial dysfunction in obesity: potential benefit and mechanism of Co-enzyme Q10 supplementation in metabolic syndrome. Journal of Diabetes & Metabolic Disorders. 2014 Dec;13(1):60.

25. Alam MA, Subhan N, **Rahman MM**, Uddin SJ, Reza HM, Sarker SD. Effect of citrus flavonoids, naringin and naringenin, on metabolic syndrome and their mechanisms of action. Advances in Nutrition. 2014 Jul 7;5(4):404-17.

2013

- 26. Rosell A, Agin V, **Rahman M**, Morancho A, Ali C, Koistinaho J, Wang X, Vivien D, Schwaninger M, Montaner J. Distal occlusion of the middle cerebral artery in mice: are we ready to assess long-term functional outcome? Translational stroke research. 2013 Jun 1;4(3):297-307.
- 27. Mc Guire C, **Rahman M**, Schwaninger M, Beyaert R, van Loo G. The ubiquitin editing enzyme A20 (TNFAIP3) is upregulated during permanent middle cerebral artery occlusion but does not influence disease outcome. Cell death & disease. 2013 Mar;4(3):e531.
- 28. Al-Amin MM, Uddin MM, **Rahman MM**, Reza HM, Rana MS. Effect of diclofenac and antidepressants on the inflammatory response in astrocyte cell culture. Inflammopharmacology. 2013 Dec 1;21(6):421-5.
- 29. **Rahman M**. Induction of a neuroprotective phenotype of macrophages by the β-hydroxybutyrate receptor HCA2 (Doctoral dissertation, University of Heidelberg press).

2012

30. Bargiotas P, Muhammad S, **Rahman M**, Jakob N, Trabold R, Fuchs E, Schilling L, Plesnila N, Monyer H, Schwaninger M. Connexin 36 promotes cortical spreading depolarization and ischemic brain damage. Brain research. 2012 Oct 15;1479:80-5.

2011

31. Subhan N, Habibur R, Ashraful A, Rashedul I, **Mahbubur R**. Relationship between protein-binding and free drug concentrations of a sparingly water-soluble selective serotonin reuptake inhibitor (escitalopram) and its interaction with arsenic. Rom. J. Biophys. 2011;21(2):139-49.

2010

- 32. Zulfiker AH, Ripa FA, **Rahman MM**, Ullah MO, Hamid K, Khan MM, Rana MS. Antidiabetic and antioxidant effect of Scoparia dulcis in alloxan induced albino mice. International Journal of PharmTech Research. 2010 Jan 1;2(4):2527-34.
- 33. Zulfiker AH, **Rahman MM**, Hossain MK, Hamid K, Mazumder ME, Rana MS. In vivo analgesic activity of ethanolic extracts of two medicinal plants-Scoparia dulcis L. and Ficus racemosa Linn. Biol Med. 2010;2(2):42-8.

Abstracts and Presentation:

- 1. Amelioration of motor deficits by Miglitol in a mouse model of Parkinson's Disease. Irona Mostafa, Shaila Akter, Avhijeet Ray Avhi, Fowzia Afsana Chowdhury, Tory Bosu, Anup Mallick, Tazree Hassan, Bushra Zaman, and Dr. Md. Mahbubur Rahman. 1st International Conference for Drug Discovery & Development and Pharma Exhibition'22, Independent University Bangladesh, September 19-20, 2022.
- 2. Efficacy of Malic Acid in motor dysfunction reduction in a mouse model of cerebral ischemia. Sabiha Baker, Tazree Hassan, Irona Mostafa, Yeashin Arafat, Bushra Zaman, and Dr. Md. Mahbubur Rahman. 1st International Conference for Drug Discovery & Development and Pharma Exhibition'22, Independent University Bangladesh, September 19-20, 2022.
- 3. Neuroprotective Role of Pamoic Acid in Parkinson's Disease. Humayra Bintha Haque, Kazi Samanta Jerin, Aashian Ibnat, Mohammad Maher Uddin, Uzma Farzana, Ariful Haque Abir, Shamim Ahmed, and Dr. Md. Mahbubur Rahman. 1st International Conference for Drug Discovery & Development and Pharma Exhibition'22, Independent University Bangladesh. September 19-20, 2022.
- 4. Role of pamoic acid in scopolamine induced mouse model of dementia. Shamim Ahmed, Amana Akter, Nusrat Jahan, Bushra Zaman, Tazree Hassan, Irona Mostafa, Sabiha Baker, Tahia Islam, Md. Ismayel Hossain, Md. Abu Anam, Yeashin Arafat, and Dr. Md. Mahbubur Rahman. The 2nd International Conference on Genomics, Nanotech, and Bioengineering-2022 (ICGNB-2022), North South University. June 26-28, 2022.
- 5. Neuroprotective effect of Malic acid in a mouse model of stroke. Neda Khurshid, Bushra Zaman, Tazree Hassan, Irona Mostafa, Sabiha Baker, Kazi Shihabur Rahman, Alamgir Hossain, Shamim Ahmed, Amana Akter, Ozayra Sharmin, Ariful Haque Abir, and Md. Mahbubur Rahman. The 2nd International Conference on Genomics, Nanotech, and Bioengineering-2022 (ICGNB-2022), North South University. June 26-28, 2022.
- 6. Optimization of Donepezil Loaded Liposome for Nose-to-Brain Delivery An in-vitro Mucoadhesion, and ex-vivo Permeability Study. Syed Nafis Shadman Ali, Raiyan Ahmed Khan, Nazia Zuen Anamika, Mahbubur Rahman, Mohsin Kazi, Mohammad Hossain Shariare. The 2nd International Conference on Genomics, Nanotech, and Bioengineering-2022 (ICGNB-2022), North South University. June 26-28, 2022.

- 7. Neuroprotective effect of pamoic acid in a mouse model of cerebral ischemia. Ozayra Sharmin1, Ariful Haque Abir1, Mahabub Alam, Abdullah Potol, Mehedi Hassan, and Md. Mahbubur Rahman. 5th Neuroscience meeting in Bonn, Germany, March 25-27, 2019.
- 8. Coenzyme Q10 improves dementia on alloxan induced diabetic rat. Abdullah Potol, Mahabub Alam, A.K.M Mahfuzur Rahman, Ozayra Sharmin, Nuzhat Tarannum, Jewel Banik, and Md Mahbubur Rahman. 5th Neuroscience meeting in Bonn, Germany, March 25-27, 2019

9. Neuroprotective effect of DL-Malic acid in a mouse model of cerebral ischemia. Ariful Haque Abir, Ozayra Sharmin, Noshin Noorjahan, Zarrin Tasnim, Mahinoor Fairoos, Nafisa Tanjeen Nokshi, Mahabub Alam, and Md. Mahbubur Rahman. 5th Neuroscience meeting in Bonn, Germany, March 25-27, 2019

2018

- 10. Prenatal inositol treatment improves autism like symptoms in valproic acid induced mouse model of autism, 3rd Young Scientist Congress 2018, Bangladesh Academy of Science, Bangladesh.
- 11. Neuroprotective effect of Acacia Nilotica in mouse model of cerebral ischemia, 3rd Young Scientist Congress 2018, Bangladesh Academy of Science, Bangladesh
- 12. Astaxanthin ameliorates motor symptoms by reducing oxidative stress and inflammation in Reserpine induced mouse model of Parkinson's disease, 3rd Young Scientist Congress 2018, Bangladesh Academy of Science, Bangladesh
- 13. Effect of *Blumera Lacera* leaves extract on cerebral ischemia, 3rd Young Scientist **Congress** 2018, Bangladesh Academy of Science, Bangladesh

- 14. Mahabub Alam, Jewel Banik, Nuzhat Tarannum, Ozayra Sharmin, Md. Abdullah Potol, Rasiqh Wadud, Zaki Farhad Habib, and Md. Mahbubur Rahman, Neuroprotective effects of Aphanamixis Polystachya leaves extract in Cerebral Ischemia, International Conference on genomics nanotechnology and Bioengineering 2017, North South University, Dhaka, Bangladesh
- **15.** Rupali Rani chakraborti, Md. Fazlur Rahman Khan, Rawnock Afrin, Mahabubul Alam, Md. Abdullah Potol, Humayra Jannat, Fahmida Zaman, Rasiqh Wadud, **Md. Mahbubur Rahman**, and Zaki Farhad Habib, **International Conference on genomics nanotechnology and Bioengineering** 2017, North South University, Dhaka, Bangladesh
- 16. Md.Fazlur Rahman Khan, Rupali Rani chakraborti, Rawnock Afrin, Mahabubul Alam, Md. Abdullah Potol, Fahmida Zaman ,Humayra Jannat, Zaki Farhad Habib, Md. Mahbubur Rahman, and Rasiqh Wadud, International Conference on genomics nanotechnology and Bioengineering 2017, North South University, Dhaka , Bangladesh
- 17. Md. Abdullah Potol, Mahabub Alam, Jewel Banik, Ozayra Sharmin, Nuzhat Tarannum, Rasiqh Wadud, Zaki Farhad Habib, Obayed Ullah, and Md. Mahbubur Rahman*, Aphanamixis Polystachya leave extract improves stroke outcome by by enhancing anti oxidative defense mechanism. 10th International Conference on Neuroscience and Neurochemistry February 27-28, 2017 Amsterdam, Netherlands

- **18. M. Rahman**, s. Muhammad, j. G. Okun, s. Offermanns, m. Schwaninger. The hydroxylcarboxylic acid receptor 2 reduces ischemic brain damage through an immunomodulatory mechanism. Cluster of Excellence in inflammation Research, 'Inflammation at Interfaces' **Hamburg, Germany** (2013), Poster.
- **19.** Hui Chen, Antje Krenz, Myriam Grimm, **Mahbubur Rahman**, Nina Wettschureck and Markus Schwaninger. Dimethyl fumarate alleviates experimental autoimmune encephalomyelitis (E.A.E.) via HCA₂ receptors. Cluster of Excellence in inflammation Research, 'Inflammation at Interfaces' **Hamburg, Germany** (2013), Poster

20. M. Rahman, s. Muhammad, j. G. Okun, s. Offermanns, m. Schwaninger. HCA2-mediated protective effect of nicotinic acid in cerebral ischemia. **Society for Neuroscience**, **New Orleans**, LA (2012); Poster

- **21.** Michalski, A.-M.; Rahman, M.; Groß, A.; Alborzinia, H.; Seeburg, P. H.; Wölfl, S.; Schwaninger, M.; Sprengel, R.: Novel recombinant AAV gene delivery systems for the modulation of BMP signaling in ischemic injury. **Society for Neuroscience**, **Washington**, **DC** (2011); Poster
- **22.** Salinin S, Muhammad S, **Rahman M**, Ridder DA, Schröck H, Offewrmanns S, Schwaninger M. The crucial role of endothelial G_{q/11} in regulation of cerebral blood flow. XXV the International symposium on Cerebral Blood flow, Metabolism, and Function & Xth International Conference on Quantification of Brain Functions with PET. **Barcelona**, **Spain**, May 25-28, 2011.