EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

Curriculum Vitae

Personal information

Mettine Bos

Work experience

1/2012-present **Associate Professor**, Leiden University Medical Center, Div. of Thrombosis and Hemostasis, Einthoven Laboratory for Vascular and Regenerative Medicine, Leiden, NL

6/2024-present **Director**, Einthoven Laboratory for Vascular and Regenerative Medicine, Leiden University Medical Center, Leiden, NL

- Responsible for the quality, social cohesion, and outreach of the Einthoven Laboratory for Vascular and Regenerative Medicine.

1/2012-2/2025 **Assistant Professor**, Leiden University Medical Center, Div. of Thrombosis and Hemostasis, Einthoven Laboratory for Vascular and Regenerative Medicine, Leiden, NL

- Project leader on research projects aimed at studying the molecular regulation and evolution of blood coagulation factors V, VIII, IX, X, and II to develop protein therapeutics for the treatment of bleeding.
- Identified new protein variants with therapeutic relevance, resulting in two patents, of which one is licensed and has phase 1 clinical development completed (VarmX B.V.).
- Responsible for acquisition, managing resources, meeting deliverables, and due diligence for contract research projects, personal grants, and consortia funding
- Establishing and maintaining collaborations with national (Dr. Vonk, Leiden; Dr. Geerke, Amsterdam; Dr. Nicolaes, Dr. Dijkgraaf, Maastricht; Dr. van ‘t Veer, Amsterdam) and international (Dr. Kini, Singapore; Dr. Fry, Australia; Drs. Siguret/Christophe, France) specialists in structure-function studies on blood coagulation proteins, biomolecular computational chemistry, snake evolution, therapeutic biotechnology, and other related expertise.
- Gained international recognition as leader in the field; invited for research seminars, editorial boards, scientific committees, boards of professional organizations.

8/2010-12/2011 **Senior Researcher**, Leiden University Medical Center, Dept. of Thrombosis and Hemostasis, Einthoven Laboratory for Experimental Vascular Medicine, Leiden, NL

Advisor: Prof. P.H. Reitsma, Ph.D., Director of the Einthoven Laboratory for Experimental Vascular Medicine, Leiden University Medical Center and Professor in Experimental Molecular Medicine, Leiden University

- Successfully obtained personal grants from the Bayer Hemophilia Awards Program, Dutch Thrombosis Foundation, and National Blood Foundation funding a PhD student and a research technician to study the molecular regulation of blood coagulation factor V using a venomous Australian snake as a model.
- Implemented a novel protein expression and purification platform in the Einthoven Lab.

11/2005-8/2010 **Post-Doctoral Fellow**, University of Pennsylvania/Children's Hospital of Philadelphia, Div. of Hematology, Philadelphia, PA, United States

Advisor: Rodney M. Camire, Ph.D., Associate Professor in Pediatrics, University of Pennsylvania and Children's Hospital of Philadelphia

- Identified structural determinants on blood coagulation factors V and VIII that are important for their activation to a cofactor; this provided a framework for protein engineering to develop cofactor derivatives as novel therapeutics for thrombotic and bleeding disorders.
- Gained international recognition by publishing research results in high impact factor peer-reviewed journals and presenting abstracts at national and international scientific meetings.
- Identified new protein variants with potential therapeutic relevance, resulting in two patents.
- Established and maintained a worldwide network of collaborations with researchers in the field of hematology.
- Awarded funding by the National Hemophilia Foundation through a fellowship that is annually awarded to no more than two hemostasis researchers within the US.
- Successfully obtained personal funding (Marie Curie International Reintegration Grant) that facilitated transition as a senior researcher to the Leiden University Medical Center, NL.

1/2000-3/2005 **PhD Student**, Sanquin Research, Dept. of Plasma Proteins, Amsterdam, NL

Advisor: Prof. Koen Mertens, Ph.D., Director of the Department of Plasma Proteins, Sanquin Research and Professor in Pharmaceutical Plasma Proteins, Faculty of Science, Utrecht University

- Investigated the regulatory mechanisms that result in the downregulation of the activity of blood coagulation factors V and VIII in order to identify novel ways to treat bleeding disorders such as hemophilia.
- Wrote manuscripts for publication and a Ph.D. thesis; presented research results at international scientific meetings.
- Awarded with the XVIIIth Congress of the International Society on Thrombosis and Haemostasis (ISTH) Presidential Prize, which was granted to only ten out of approximately 4,000 submitted abstracts.

Education and training

2018 **BROK** (re)certification on Good Clinical Practice, valid until 07-12-2025

2006 **Ph.D.** in Biochemistry - Utrecht University, Utrecht; Sanquin Research, Amsterdam, The Netherlands (NL)

Thesis: 'Regulatory mechanisms in the inactivation of blood coagulation factors V and VIII'

2000 **M.Sc.** in Chemistry and Pharmacochemistry, Free University (VU), Amsterdam, NL

Additional information

Publications

1. Strijbis V.J.F.*, Cheung K.L.*, Veizaj D., Rutten T., de Bruin B., Reitsma P.H., Verhoef D., **Bos M.H.A**. Modifications of the prothrombin active site S4 subpocket confer resistance to dabigatran. *Thrombosis and Haemostasis* accepted, 2025. *equal contribution.
2. Zivkovic M., *et al.* Symphony Consortium (**Bos M.H.A.**). Functional characterization of a nanobody-based glycoprotein VI-specific platelet agonist. *Research and Practice in Thrombosis and Haemostasis* 8(7): 102582, 2024.

3. **Bos M.H.A.**, van Diest, R.E., Monroe D.M. Blood coagulation factor IX: structural insights impacting hemophilia B therapy. *Blood* 144(21): 2198, 2024. PMID: 38996207.
4. Sol-Maag A., Peters Sengers H., **Bos M.H.A.**, van der Poll T., van Rein N.*, van ‘t Veer C.* Plasma thrombin generation in the presence of TIX-5 may contribute significantly to a prediction model for major bleeding in patients on VKA anticoagulant therapy. *Thrombosis Update.* 2024. *accepted*. *equal contribution
5. Schreuder M., Jourdi G.*, Veizaj D.*, Poole D.A., Cheung K.L., Poenou G., Verhoef D., Thomassen S., Janssen L.F.H. Janssen, Stepanian A., Hackeng T.M., Gaussem P., Reitsma P.H., Geerke D.P., Siguret, V., **Bos M.H.A**. Minimally modified human blood coagulation factor X to bypass direct factor Xa inhibitors. *J. Thromb. Haemost.* 2024. *accepted*. *equal contribution
6. Camilleri E., Ghobreyal M., **Bos M.H.A.**, Reitsma P.H., van der Meer F.J.M., Swen J.J., Cannegieter S.C., van Rein N. Genetic polymorphisms and major bleeding risk during Vitamin K Antagonists treatment: the BLEED case-cohort study. Pharmcotherapy 2024. *accepted*.
7. Buijs S.M.*, van Dorst D.C.H.*, Kruip M.J.H.A., van den Akker R.F.P., Cheung K.L., Porrazzo R., Oomen-de Hoop E., Jager A., Koolen S.W.L., Versmissen J., Danser A.H.J., Versteeg H.H., **Bos M.H.A.***, Mathijssen R.H.J.* The interplay between tamoxifen and endoxifen plasma concentrations and coagulation parameters in patients with primary breast cancer. *Biomed. Pharmacother*. 170: 115969, 2024. *equal contribution. PMID: 38042112
8. Strijbis V.J.F., Vatandoost J., **Bos M.H.A**. Crippling down factor IX for therapeutic gain. *J. Thromb. Haemost.* 2023, 21(12): 3287-3291, 2023. PMID: 37678545
9. van der Horst S.F.B., Martens E.S.L., den Exter P.L., **Bos M.H.A**., van Mens T.E., Huisman M.V., Klok F.A. Idarucizumab for dabigatran reversal: a systematic review and meta-analysis of indications and outcomes. *Thrombosis Research* 228: 21-32, 2023. PMID: 37267671
10. Veizaj D., den Exter P.L., **Bos M.H.A**. Russell’s viper venom: from diagnostic to bypassing agent for hemophilia? *J. Thromb. Haemost.* 21(6): 1429-1431, 2023. PMID: 37179074
11. Strijbis V.J.F.*, Romano L.G.R.*, Cheung K.L., Eikenboom J., Liu Y.P., McCreary A.C., Leebeek F.W.G., **Bos M.H.A**. A factor IX variant that functions independently of factor VIII mitigates the hemophilia A phenotype in patient plasma. *J. Thromb. Haemost.* 21(6): 1466-1477, 2023. *equal contribution. PMID: 36863564
12. van Heteren D.M., Lijfering W.M., van der Meer F.J.M., Reitsma P.H., Swen J.J., **Bos M.H.A**., van Rein N. Association of VKORC1 polymorphisms and major bleedings in patients who are treated with Vitamin K antagonists. *J. Int. Med.* 293(1): 124-127, 2023. PMID: 36125842.
13. Noordermeer T., et al. Dutch COVID & Thrombosis Coalition (**Bos M.H.A.**). Lupus anticoagulant associates with thrombosis in patients with COVID-19 admitted to intensive care units: A retrospective cohort study. Res. Pract. Thromb. Haemost. 16(6): e12809, 2022. PMID: 36178455.
14. Vatandoost J., **Bos M.H.A**. Effect of prepropeptide replacement on γ-carboxylation and activity of recombinant coagulation factor IX. *Biotechn. Lett.* 44(8): 975-984, 2022. PMID: 35731352.
15. Touw C.E., Nemeth B., Rondon A.M.R., van Adrichem R.A., Lisman T., Versteeg H.H., Schipper I.B., Nelissen R., **Bos M.H.A**, Cannegieter S.C. Lower-

leg injury and knee arthroscopy have distinct effects on coagulation. *Blood Advances* 6(17): 5232-5243, 2022. PMID: 35609312.

16. Dolleman S.C., Agten S.M., Spronk H.M.H., Hackeng T.M., Versteeg H.H., **Bos M.H.A**, van Zonneveld A.J., de Boer H.C. Thrombin in complex with dabigatran can still interact with PAR-1 via exosite-I and instigate loss of vascular integrity. *J. Thromb. Haemost.* 20(4): 996-1007, 2022. PMID: 35037739.
17. Maag A., van Rein N., Schuijt T.J., Kopatz W.F., Kruijswijk D., Thomassen S., Hackeng T.M., Camire R.M., van der Poll T., Meijers J.C.M., **Bos M.H.A**.*, van ‘t Veer C*. Major bleeding during oral anticoagulant therapy associated with factor V activation by factor Xa. *J. Thromb. Haemost.* 20(2): 328-338, 2022. *equal contribution. PMID: 34773381.
18. op den Brouw B., Ghezellou P., Casewell N.R., Abid Ali S., Fathinia B., Fry B.G., **Bos M.H.A***, Ikonomopoulou M.P.*. Pharmacological characterisation of Pseudocerastes and Eristicophis viper venoms reveal anticancer (melanoma) properties and a potentially novel mode of fibrinogenolysis. *Int. J. Mol. Sci.* 22(13): 6896, 2021. *equal contribution. PMID: 34199017.
19. Schreuder M.*, Liu X.*, Cheung K.L., Reitsma P.H., Nicolaes G.A.F., **Bos M.H.A**. *Pseudonaja textilis* venom-derived factor Va retains structural integrity following proteolysis by activated protein C. *Arterioscler. Thromb. Vasc. Biol.* 41(8): 2263-2276, 2021. *equal contribution. PMID: 34162230.
20. Maag A., Sharma P., Schuijt T.J., Kopatz W.F., Kruijswijk D., Marquart J.A., van der Poll T., Hackeng T.M., Nicolaes G.A.F., Meijers J.C.M., **Bos M.H.A.**, van 't Veer C. Structure-function of anticoagulant TIX-5, the inhibitor of factor Xa-mediated FV activation. *J. Thromb. Haemost.* 19(7); 1696-1708, 2021. PMID: 33829620.
21. Verhoef D., Tjalma A.V.R., Cheung K.L., Reitsma P.H., **Bos M.H.A.** Elevated anti-human factor Xa activity in rabbit and rodent plasma: implications for preclinical assessment of human factor X in animal models of hemostasis. *Thrombosis Research* 198: 154-162, 2020. PMID: 33348189.
22. Morelli V., de Mutsert R., de Roos A., Lamb H., van Hylckama Vlieg A., **Bos M.H.A.**, Rosendaal F.R., Lijfering W.M., Cannegieter S.C. Association between hepatic triglyceride content and coagulation factors: The Netherlands Epidemiology of Obesity Study. *Arterioscl. Thromb. Vasc. Biol.* 40(12): 3004-3014, 2020. PMID: 33115270.
23. Toorop M.M.A., van Rein N., Cannegieter S.C., van der Meer F., Reitsma P.H., Lijfering W.M., **Bos M.H.A**. High soluble thrombomodulin is associated with an increased risk of major bleeding during treatment with oral anticoagulants: a case-cohort study. *Thromb. Haemost.* 121(1) 70-75, 2020. PMID: 32854121.
24. Schreuder M.*, Poenou G.*, Strijbis V.J.F., Cheung K.L., Reitsma P.H., **Bos M.H.A**. Evolutionary adaptations in Pseudonaja textilis venom FX induce zymogen activity and resistance to the intrinsic tenase complex. *Thromb. Haemost.* 120(11): 1512-1523, 2020. *equal contribution. PMID: 32820486.
25. Schreuder M., Reitsma P.H., **Bos M.H.A**. Reversal agents for the direct factor Xa inhibitors: biochemical mechanisms of current and newly emerging therapies. *Seminars in Thromb. Haemost.* 46(8):986-998, 2020. PMID: 32688432.
26. **Bos M.H.A**., F.J.M. van der Meer. Vitamin K therapy to reduce bleeding. *Blood* 136(7): 780–782, 2020. PMID: 32790852.
27. van Gent, J.A.N, van Essen, T.A., **Bos M.H.A.**, Cannegieter S.C., van Dijck

J.T.J.M, Peul W.C. Coagulopathy after haemorrhagic traumatic brain injury, an observational study of the incidence and prognosis. *Acta Neurochirurgica* 162(2): 329-336, 2020. PMID: 31741112.

28. Pakdaman, S.F., Vatandoost, J., **Bos M.H.A.** Enhanced Functional Recombinant Factor IX Production by HEK Cells Engineered to Overexpress VKORC1. *Biotechnology Progress* 36(2): e2938, 2020. PMID: 31677255.
29. Debono J., **Bos M.H.A**., Do M.S., Fry B.G. Clinical implications of coagulotoxic variations in Mamushi (Viperidae: Gloydius) snake venoms. *Comp Biochem Physiol C Toxicol Pharmacol* 225: 108567-, 2019. PMID: 31306806.
30. Vatandoost, J., **Bos M.H.A.** Improved activity and expression of recombinant human factor IX by propeptide engineering. *Daru J of Pharm Sciences* 2019, doi: 10.1007/s40199-019-0029908. PMID: 31637661.
31. Debono J., **Bos M.H.A**., Frank N., Fry B.G. Clinical implications of differential antivenom efficacy in neutralising coagulotoxicity produced by venoms from species within the arboreal viperid snake genus Trimeresurus. *Toxicology Letters* 316: 35-48, 2019. PMID: 31509773.
32. Ward C.M., Andrews R.K. ISTH State of the Art Speakers (**Bos M.H.A.**). Illustrated State-of-the-Art Capsules of the ISTH 2019 Congress in Melbourne, Australia. *Res. Pract. Thromb. Haemost.* 3(3):431-497, 2019. PMID: 31294333.
33. Schreuder M., Reitsma P.H., **Bos M.H.A**. Blood coagulation factor Va's key interactive residues and regions for prothrombinase assembly and prothrombin binding. *J. Thromb. Haemost.* 17(8):1229-1239, 2019. PMID: 31102425.
34. Debono J., **Bos M.H.A**., Coimbra F., Ge L., Frank N., Kwok H.F., Fry B.G. Basal but divergent: Clinical implications of differential coagulotoxicity in a clade of Asian vipers. *Toxicology in vitro* 58: 195-206, 2019. PMID: 30930232.
35. Zdenek C.N., Hay C., Arbuckle K., Jackson T.N.W., **Bos M.H.A**., op den Brouw B., Debono J., Allen L., Dunstan N., Morley T., Herrera M., Gutierrez J.M., Williams D.J., Fry B.G. Coagulotoxic effects by brown snake (Pseudonaja) and taipan (Oxyuranus) venoms, and the efficacy of a new antivenom. *Toxicology in vitro* 58: 97-109, 2019. PMID: 30910521.
36. **Bos M.H.A**., Versteeg H.H. Snakebites and microvesicles: popping bubbles. *Res. Pract. Thromb. Haemost.* 3(2): 156-157, 2019. PMID: 31011698.
37. Orsi F.A., Biedermann J.S., Kruip M.J.H.A., van der Meer F.J., Rosendaal F.R., van Hylckama Vlieg A., **Bos M.H.A**., Leebeek F.W.G., Cannegieter S.C., Lijfering W.M. Rosuvastatin use reduces thrombin generation potential in patients with venous thromboembolism: a randomized controlled trial. *J. Thromb. Haemost.* 17(2): 319-328, 2019. PMID: 30565854.
38. Debono J., **Bos M.H.A**., Nouwens A., Ge L., Frank N., Kwok H.F., Fry B.G. Habu coagulotoxicity: Clinical implications of the functional diversification of *Protobothrops* snake venoms upon blood clotting factors. *Toxicology in Vitro* 55: 62-74, 2018. PMID: 30471431.
39. Rietveld I.M., Lijfering W.M., le Cessie S., **Bos M.H.A**., Rosendaal F.R., Reitsma P.H., Cannegieter S.C. High levels of coagulation factors and venous thrombosis risk: strongest association for factor VIII and von Willebrand factor. *J. Thromb. Haemost.* 17: 99-109, 2018. PMID: 30471183.
40. Rietveld I.M., Schreuder M., Reitsma P.H., **Bos M.H.A**. Elevated coagulation factor levels affect the tissue factor-threshold in thrombin generation. *Thrombosis Research* 172: 104–109, 2018. PMID: 30408635.
41. Rietveld I.M., **Bos M.H.A.**, Lijfering W.M., Li-Gao R., Rosendaal F.R.,

Reitsma P.H., Cannegieter S.C. Factor V levels and risk of venous thrombosis: The MEGA case-control study. *Research and Practice in Thrombosis and Haemostasis* 2: 320-326, 2018. PMID: 30046734.

42. Verhoef D., Visscher K.M., Vosmeer C.R., Cheung K.L., Reitsma P.H., Geerke D.P., **Bos M.H.A.** Engineered factor Xa variants retain procoagulant activity independent of direct factor Xa inhibitors. *Nature Communications* 8: 528, 2017. PMID: 28904343.
43. Morelli V.M., Lijfering W.M., **Bos M.H.A.**, Rosendaal F.R., Cannegieter S.C. Lipid levels and risk of venous thrombosis: results from the MEGA-study. *Eur. J. Epidemiol* 32(8): 669-681, 2017. PMID: 28540474.
44. van Rein N., Lijfering W.M., **Bos M.H.A.**, Herruer M., Vermaas H., van der Meer F.J.M., Reitsma P.H. Objectives and design of BLEEDS: a cohort study to identify new risk factors and predictors for major bleeding during treatment with vitamin K antagonists. *PLOS One* 11(12): e0164485, 2016. PMID: 27935941.
45. Vatandoost J., **Bos M.H.A.** Efficient expression of functional human coagulation factor IX in stably transfected Drosophila melanogaster S2 cells; comparison with the mammalian CHO system. *Biotechnol. Lett.* 38(10): 1691-98, 2016. PMID: 27565667.
46. Khorshidi S., Zomorodipour A., Behmanesh M., Vatandoost J., **Bos M.H.A.** Functional expression of the human coagulation factor IX using heterologous signal peptide and propeptide sequences in mammalian cell line. *Biotechnol. Lett.* 37(9): 1773-81, 2015. PMID: 26105559.
47. Kleinegris M.C., **Bos M.H.A.**, Roest M., Henskens Y., ten Cate-Hoek A., van Deursen C., Spronk H.M., Reitsma P.H., de Groot P.G., ten Cate H., Koek G. Cirrhosis patients have a coagulopathy that is associated with decreased clot formation capacity. *J. Thromb. Haemost.* 12(10): 1647-57, 2014. PMID: 25142532.
48. Verhoef D., Yang X., Parthasarathy S., Reitsma P.H., Camire R.M., **Bos M.H.A.** Functional implications of the unique disulfide bond in venom factor V from the Australian common brown snake Pseudonaja textilis. *Toxin Reviews* 33(1-2): 37-41, 2014.
49. Bunce M.W., **Bos M.H.A.**, Krishnaswamy S., Camire R.M. Restoring the procofactor state of factor Va-like variants by complementation with B-domain peptides. *J. Biol. Chem.* 288(42): 30151-30160, 2013. PMID: 24014022.
50. **Bos M.H.A.**, Camire R.M. A bipartite autoinhibitory region within the B-domain suppresses function in factor V. *J. Biol. Chem.* 287(31): 26342-26351, 2012. PMID: 22707727.
51. van den Hengel L.G., van den Berg Y.W., Reitsma P.H., **Bos M.H.A.**, Versteeg H.H. Evolutionary conservation of the tissue factor disulfide bonds and identification of a possible oxidoreductase binding motif. *J. Thromb. Haemost.* 10(1): 161-162, 2012. PMID: 22066736.
52. Vatandoost J., Zomorodipour A., Sadeghizadeh M., Aliyari R., **Bos M.H.A.**, Ataei F. Expression of biologically active human clotting factor IX in Drosophila S2 cells: γ-carboxylation of a human vitamin K-dependent protein by the insect enzyme. *Biotechnol. Prog.* 28(1): 45-51, 2012. PMID: 22012919.
53. **Bos M.H.A.**, Camire R.M. Blood coagulation factors V and VIII: molecular mechanisms of procofactor activation. *J. Coagul. Disord.* 2(2): 19-27, 2010. PMID: 21165149.
54. **Bos M.H.A.**, Camire R.M. Procoagulant adaptation of a blood coagulation prothrombinase-like enzyme complex in Australian elapid venom. *Toxins* 2(6):

1554-1567, 2010. PMID: 21127733.

55. Camire R.M., **Bos M.H.A.** The molecular basis of factor V and VIII procofactor activation. *J. Thromb. Haemost.* 7(12): 1951-1961, 2009. PMID: 19765210.
56. **Bos M.H.A.**, Boltz M., St. Pierre L., Masci P.P., de Jersey J., Lavin M.F., Camire R.M. Response: Response to clinical relevance of brown snake (Pseudonaja spp) factor V escaping hemostatic regulation. *Blood* 114(12): 2563-2564, 2009.
57. **Bos M.H.A.**, Boltz M., St. Pierre L., Masci P.P., de Jersey J., Lavin M.F., Camire R.M. Venom factor V from the common brown snake escapes hemostatic regulation through procoagulant adaptations. *Blood* 114(3): 686-692, 2009. PMID: 19365080.
58. **Bos M.H.A.**, Meijerman D.W.E., van der Zwaan C., Mertens K. Does activated protein C-resistant factor V contribute to hemophilic plasma? *J. Thromb. Haemost.* 3(3): 522-530, 2005. PMID: 15748243.
59. Post S.M., Zoetewij J.P., **Bos M.H.A.**, de Wit E.C.M., Princen H.M.G. The ACAT inhibitor avasimibe stimulates bile acid synthesis and cholesterol 7α-hydroxylase in cultured rat hepatocytes and in vivo in rat. *Hepatology* 30: 491-500, 1999. PMID: 10421659.

National (refereed) journals

57. van Rein N., **Bos M.H.A**. Antidota voor direct werkende orale anticoagulantia. *Tijdschrift voor Trombose en Antistolling* 49: 2, 2021.
58. van Rein N., **Bos M.H.A**. Antidota voor direct werkende orale anticoagulantia. *Geneesmiddelen Bulletin Medische Hulpmiddelen* 7-8: 55, 2021. https://www.ge-bu.nl/artikel/antidota-voor-direct-werkende-orale-anticoagulantia

Book Chapters

Bos M.H.A., van 't Veer C., Reitsma P.H. Chapter 112: Molecular Biology and Biochemistry of the Coagulation Factors and Pathways of Hemostasis; *10th Edition of Williams Hematology*, 2021.

Bos M.H.A., van 't Veer C., Reitsma P.H. Chapter 113: Molecular Biology and Biochemistry of the Coagulation Factors and Pathways of Hemostasis; *9th Edition of Williams Hematology*, 2016.

Projects

Personal Funding and Research Projects

1. 2020-2021 **NovoNordisk *Access to Insight* Basic Research Grant.** Principal investigator on 'Novel Strategies towards Blood Coagulation Factor IX that Functions Independently of the Cofactor VIIIa'.

2. 2018 **Bayer Grants4Targets**. Principal investigator on 'A Novel Cofactor-based Procoagulant Protein as Bypassing Agent for Hemophilia'.

3. 2015-2018 **Dutch Thrombosis Foundation Research Grant**. Co-Principal investigator on 'Uncovering the role of FXa-dependent FV activation in thrombosis or bleeding'.

4. 2015-2018 **LSBR Research Grant**, awarded by the Landsteiner Foundation for Blood Transfusion Research (LSBR). Principal investigator on 'Assembling the molecular machinery of coagulation: learning from the adaptive evolution of snake venom proteins'.

5. 2014-2016 **Bayer Special Project Award**. Principal investigator on 'A novel cofactor-based procoagulant protein as bypassing agent for hemophilia'.

6. 2011-2013 **Bayer Early Career Investigator Award**. Principal investigator on 'Mechanisms regulating the macromolecular enzyme complex

assembly in blood coagulation'.

7. 2011-2013 **American National Blood Foundation Research Grant**. Principal investigator on 'Mechanisms regulating the macromolecular enzyme complex assembly in blood coagulation'.

8. 2011-2013 **Dutch Thrombosis Foundation Research Grant**. Principal investigator on 'Molecular regulation of blood coagulation factor V: from snakes to humans'.

9. 2010-2014 **Marie Curie International Reintegration Fellowship**. Principal investigator on 'Molecular regulation of blood coagulation factor V: from snakes to humans'.

10. 2008-2010 **Judith Graham Pool Fellowship**. Principal investigator on 'Regulatory mechanisms in the activation of blood coagulation factors V and VIII

Consortia Funding and Research Projects

2020-2025 **Health Holland Public Private Partnership**, *Principal Investigator* – Top consortia for Knowledge and Innovation's and Life Sciences & Health, 'Engineering procoagulant variants of blood coagulation factor X for therapeutic purposes'. Partners: VarmX, LUMC.

2019-2021 **Health Holland Public Private Partnership**, *Principal Investigator* – Top consortia for Knowledge and Innovation's and Life Sciences & Health, 'Lessons from nature: engineering serine proteases for therapeutic purposes'. Partners: VarmX, LUMC.

2019-2021 **Australian Research Council Discoveries Project Grant** – 'Functional Evolution and Therapeutic Potential of Snake Venom Coagulotoxins'. Partners: The University of Queensland (Australia), LUMC.

2016-2019 **Eurostars**, *Principal Investigator* – an Horizon2020 Framework Program from the EU, 'An Innovative Cryogenic Tube for Vacuum Blood Collection and Cryostorage of Plasma Samples'. Partners: 1CryoBio AG (Switzerland), Triteq Ltd (UK), Pfletschinger & Gauch Betriebs-GmbH (Germany), LUMC (NL).

2011-2016 **Dutch Technology Foundation STW**; 'E-coagulation – Applied coagulation systems biology to accurately assess the hemostatic balance of individual patients'. Partners: Philips, UMCU, VU, LUMC.

2011-2015 **Dutch Center for Translation and Molecular Medicine (CTMM)**; 'Innovative Coagulation Diagnostics'. Partners: Philips, UMCU, Sanquin, AMC, MUMC, LUMC.

2011-2015 **CTMM and Netherlands Heart Foundation**; 'Dutch coagulation diagnosis study'. Partners: UMCU, Sanquin, AMC, MUMC, LUMC.

Patents

- Patent Application EU No. 15196291; 2015; Daniël Verhoef, Pieter Reitsma, and Mettine Bos; "Recombinant serine proteases", Leiden University/Academic Hospital Leiden.
- Granted Patent WO 2015183085 A1; 2014; Daniël Verhoef, Pieter Reitsma, and Mettine Bos; "Prohemostatic proteins for the treatment of bleeding", Leiden University/Academic Hospital Leiden. *Under license agreement.*
- Granted Patent US 10,239,933 B2; 2011; Rodney Camire, Matthew Bunce, and Mettine Bos; "Compositions and methods for modulating thrombin generation", The Children's Hospital of Philadelphia. *Issued March 2019, United States.*
- Granted Patent US 8557762 B2; 2009; Rodney Camire and Mettine Bos; "Snake factor V and methods of use as a procoagulant", The Children's Hospital of Philadelphia. *Issued June 2016, Canada.*

Memberships

Leadership, Boards, Committees

Leadership:

Chair (2024-2026), of the *European Thrombosis and Haemostasis Alliance*, a professional organization advocating for thrombosis and hemostasis in the EU patient safety and research programs. Previously vice-chair, 2023-2024.

President (2019-2023), of the *Dutch Society on Thrombosis and Haemostasis*, a professional association of basic and clinical researchers working in the field of blood coagulation. Previously responsible for the annual scientific symposium, 2017-2018.

Founder (2012-2016), of the *Young Faculty Network* (YFN), a platform promoting research and career opportunities at the Leiden University Medical Center.

Co-founder (2015), of *PostdocNL*, a platform that united and represents postdocs from all backgrounds and knowledge institutions in The Netherlands.

Editorial Boards:

Journal of Thrombosis and Haemostasis (JTH), one of the world's leading journals in the field of hemostasis and thrombosis science and clinical care. The journal is published by Wiley as an official journal of the ISTH (ISSN 1538-7836), 2021-present.

Frontiers in Cardiovascular Medicine - Thrombosis, an open access, peer reviewed journal of basic, translational, and clinical cardiovascular medicine (ISSN 2297-055X), 2020-2023.

Toxins, an open access, peer-reviewed journal of toxinology published monthly online (ISSN 2072-6651), 2016-2023.

Research and Practice in Thrombosis and Haemostasis (RPTH), an open access, peer reviewed journal of thrombosis, hemostasis and related areas, supported by the ISTH (ISSN 2475-0379), 2017-2022.

International Society on Thrombosis an Haemostasis Committee Member:

- Scientific Topic Theme Committee on Coagulation and Natural Anticoagulants, ISTH Congress 2021, 2023
- Abstract Reviewer ISTH Congress, 2024-23, 2021-2019, 2013
- Education Live Courses ISTH Subcommittee, 2020-2024
- International Advisory Board Member, 2020-present
- Scientific Subcommittee on Coagulation & Fibrinolysis, ISTH Congress 2013
- Social Program Committee, ISTH Congress 2013

American Society of Hematology Committee Member:

- Scientific Committee on Hemostasis, 2022-2026, Vice-Chair 2025, Chair 2026
- Review Committee ASH Meeting Section 'Blood Coagulation and Fibrinolytic Factors', 2021, 2017, 2013

Major Career Awards / Honors

2023 **Twitter Ambassador** for International World Thrombosis Day
2022 **Twitter Ambassador** for the ISTH2022 Congress (London, UK)
2021 Nominated by my PhD students for **PhD Supervisor of the Year 2021** organized by the LUMC Association for PhD candidates (LAP).
2021 **Twitter Ambassador** for the ISTH2021 Congress (online)
2021 Nominated for **NWO's Athena Award 2021** by all female early career researchers in the Thrombosis and Hemostasis section
2021 Nomination **Best Course Biomedical Sciences 2020-2021** by the LUMC student association of the 'Frontiers in science' course 'The Pathophysiology of Coagulation' for Biomedical Master students.
2017 **Focus Grant Recipient (€10.000)**, Bayer Grants4Targets Program
2015 **Winner Hemophilia Slam**, Bayer HealthCare Hematology Conference
2013 **Ulla Hedner Award (€15,000)**, Novo Nordisk's Access to Insight Program
2013 **American National Blood Foundation Scholar**
2011 **Bayer Early Career Investigator**

2010 **Marie Curie Fellow**
2008 **Judith Graham Pool Fellow**
2007 **Poster Prize ($300)**, Fellow's Research Poster Day, Children's Hospital of Philadelphia
2003 **Young Investigator Award (£300)**, XIXth Congress of the ISTH
2001 **Presidential Prize (€1,500)**, XVIIIth Congress of the ISTH

Invited Speaker

2024 Interdisciplinary Center for Quantitative Modeling in Biology, University of California, Riverside (Riverside, US)
2024 Venom Symposium, VU Amsterdam (Amsterdam, NL)
2023 Masterclass: Structure and Function of Coagulation Factors, Congress of the ISTH (Montréal, Canada)
2023 Roche (Basel, Switzerland)
2022 Gordon Research Conference on Hemostasis (Waterville Valley, US)
2022 Mentors & Mentees: A Relationship of Mutual Benefit, 30th Congress of the ISTH (London, UK)
2022 Mutants of Hemostatic Proteins as Potential Therapeutics, ISTH Webinar
2022 10th Symposium on Hemostasis, North Carolina (Chapel Hill, US)
2022 CHOP/UPENN Hematology Departments (Philadelphia, US)
2021 University of North Carolina (Chapel Hill, US)
2020 Top Research Seminar, LUMC (Leiden, NL)
2020 How to Identify Your Research Niche and Gain Independence from Your Mentor, Career Development Virtual Roundtables, 28th Congress of the ISTH
2020 Blood and Bone Seminar Series, Webinar
2019 Hôpital Georges Pompidou (Paris, France)
2019 State-of-the-Art Lecture, 27th Congress of the ISTH (Melbourne, Australia)
2018 4th Maastricht Thrombin Summer School 2018 (Maastricht, NL)
2017 Congrès du Groupe Français d'études sur l'Hémostase et la Thrombose (Caen, FR)
2016 Katharine Dormandy Distinguished Investigator Lecture, Royal Free Hospital (London, UK)
2013 5th Conference on Exogenous Factors Affecting Thrombosis and Hemostasis (Amsterdam, NL)
2013 INSERM U.770 'Hémostase et dynamique cellulaire vasculaire' (Paris, France)
2011 3rd Annual Meeting of the Center for Translational Molecular Medicine (Utrecht, NL)
2009 61st Annual Meeting of the National Hemophilia Foundation (San Francisco, US)
2009 Sanquin Research, Department of Plasma Proteins (Amsterdam, NL)
2008 Imperial College, Department of Haematology (London, UK)
2008 Novo Nordisk A/S, Haemostasis Biology (Maaloev, Denmark)
2008 University Medical Center Utrecht, Clinical Chemistry and Haematology (Utrecht, NL)
2008 Leiden University Medical Center, (Leiden, NL)
2008 Academic Medical Center, Experimental Vascular Medicine (Amsterdam, NL)
2005 The Children's Hospital of Philadelphia (Philadelphia, US)

Other Relevant Information