

Curriculum Vitae

Personal information **Leena Valmu**

Work experience

08/2021 to present: Entrepreneur, BiOva Ltd, Finland, Author, Consultant and Journalist

06/2018 to 08/2021: Solution Owner, Thermo Fisher Scientific, Finland, Technology owner of In-Vitro diagnostic microbiology platform

05/2013 to 06/2018: Senior R&D Manager, Thermo Fisher Scientific, Finland, Responsibility in method development of In-Vitro diagnostic microbiology platform

06/2012 to 05/2013: Entrepreneur, BiOva Ltd, Finland, Author, Consultant and Journalist

06/2006 to 06/2012: R&D Manager, Finnish Red Cross Blood Service, Finland, Responsibility of Stem Cell Glycomics project and Cell Surface Analytics Laboratory

01/2004 to 06/2006: Senior Scientist, Department of Clinical Chemistry University of Helsinki, Finland, Cancer biomarker analysis

01/2000 to 12/2003: Senior Scientist, Institute of Biotechnology University of Helsinki, Finland, Protein chemical core analytics

01/1989 to 12/1999: Pre- and postgraduate studies, Department of Biosciences University of Helsinki, Finland, Study of leukocyte adhesion in immunologic response

Education and training

01/1999 to 04/2006, Adjunct Professor in Biosciences, Department of Biosciences University of Helsinki, Finland, Protein mass spectrometry and Cancer Biomarker Analysis

05/1992 to 01/1999, Doctor of Philosophy, Department of Biosciences University of Helsinki, Finland, Phosphorylation of leukocyte adhesion molecule in immunologic regulation

02/1989 to 05/1992, Master of Science, Department of Biosciences University of Helsinki, Finland, Leukocyte adhesion molecule characterization

09/1986 to 02/1989, Bachelor of Science, Department of Biochemistry University of Helsinki, Finland, Leukocyte adhesion protein purification

Additional information

Publications

1. Melasniemi, H., Paloheimo, M. & **Hemiö, L.** (1990) Nucleotide sequence of the α -amylase-pullulanase gene from *Clostridium thermohydrosulfuricum*. *J. General Microbiol.* **136**, 447-454.
2. **Valmu, L.**, Autero, M., Siljander, P., Patarroyo, M. & Gahmberg, C. G. (1991) Phosphorylation of the β -subunit of CD11/CD18 integrins by protein kinase C correlates with leukocyte adhesion. *Eur. J. Immunol.* **21**, 2857-2862.
3. Li, R., Nortamo, P., **Valmu, L.**, Tolvanen, M., Huuskonen, J., Kantor, C. and Gahmberg, C. G. (1993) A peptide from ICAM-2 binds to the Leukocyte Integrin CD11a/CD18 and inhibits endothelial cell adhesion. *J. Biol. Chem.* **268**, 17513-17518.
4. Vermot-Desroches, C., Wijdenes, J., **Valmu, L.**, Roy, C., Pigott, R., Nortamo, P. and Gahmberg, C. G. (1995) A CD44 monoclonal antibody differentially regulates CD11a/CD18 binding to intercellular adhesion molecules CD54, CD102 and CD50. *Eur. J. Immunol.* **25**, 2460-2464.
5. **Valmu, L.** and Gahmberg, C. G. (1995) Treatment with okadaic acid reveals strong threonine phosphorylation of CD18 after activation of CD11/CD18 leukocyte integrins with phorbol esters or CD3 antibodies. *J. Immunol.* **155**, 1175-1183.
6. **Valmu, L.**, Hilden, T. J., van Willigen, G. and Gahmberg, C. G. (1999) Characterization of β_2 (CD18) integrin phosphorylation in phorbol ester activated T lymphocytes. *Biochem. J.* **339**, 119-125.
7. **Valmu, L.**, Fagerholm, S., Suila, H., and Gahmberg, C. G. (1999) The cytoskeletal association of CD11/CD18 leukocyte integrins in phorbol ester activated cells correlates with CD18 phosphorylation. *Eur. J. Immunol.* **29**, 2107-2118.
8. Kovanen, P. E., Junttila, K., Takaluoma, K., Saharinen, P., **Valmu, L.**, Li, W. and Silvennoinen, O. (2000) Regulation of Jak2 tyrosine kinase by protein kinase C during macrophage differentiation of IL-3-dependent myeloid progenitor cell. *Blood* **95**, 1626-1632.
9. Vassilieva, L., **Valmu, L.**, Kääriäinen, L. and Merits, A. (2001) Site-specific protease activity of the carboxy-terminal domain of Semliki Forest Virus replicase protein nsP2. *J. Biol. Chem.* **276**, 30786-30793.
10. Hilden, T. J., **Valmu, L.**, Kärkkäinen, S. and Gahmberg, C. G. (2003) Threonine phosphorylation sites in the β_2 and β_7 leukocyte integrin polypeptides. *J. Immunol.* **170**, 4170-4177.

11. Ivanov, K.I., Puustinen, P., Gabrenaite, R., Vihinen, H., Rönstrand, L. **Valmu, L.**, Kalkkinen, N. and Mäkinen, K. (2003) Phosphorylation of the Potyvirus Capsid Protein by Protein Kinase CK2 and Its relevance for Virus Infection. *Plant Cell* **15**, 2124-2139.
12. Pihlajamaa, T., Lankinen, H., **Valmu, L.**, Peränen, J., Jäälinoja, J., Zaucke, F., Spitznagel, L., Gössling, S., Maurer, P., Puustinen, A., Ylöstalo, J., Ala-Kokko, L. and Kilpeläinen, I. (2004) Characterization of recombinant amino-terminal NC4 domain of human collagen IX. Interaction with glycosaminoglycans and cartilage oligomeric matrix protein. *J. Biol. Chem.* **279**, 24265-24273.
13. Elo, M. A., Karjalainen, H. M., Sironen, R. K., **Valmu, L.**, Redpath, N. T., Browne, G. Kalkkinen, N., J., Helminen, H. J. and Lammi, M. J. (2004) High hydrostatic pressure inhibits the biosynthesis of eukaryotic elongation factor-2. *J. Cell. Biochem.* **94**, 497-507.
14. Savijoki, K., Suokko, A., Palva, A., **Valmu, L.**, Kalkkinen, N and Varmanen, P. (2005) Proteomic investigation of *Bifidobacterium longum* using [³⁵S]Methionine Labelling, Two-Dimensional Gel Electrophoresis and Mass spectrometry. *FEMS Microbiology Letters* **248**, 207-215.
15. Stenman, M., Ainola, M., **Valmu, L.**, Bjartell, A., Ma, G., Stenman, U-H., Sorsa, T., Luukkainen, R and Kontinen, Y. T. (2005) Trypsin-2 degrades human type II collagen and is expressed and activated in mesenchymally transformed rheumatoid arthritis synovitis tissue. *Am J Pathology* **167**, 1119-1124.
16. **Valmu, L.**, Kalkkinen, N., Husa, A. and Rye, P. D. (2005) Differential susceptibility of transferrin glycoforms to chymotrypsin: a potential approach to the detection of carbohydrate deficient transferrin. *Biochemistry* **44**, 16007-16013.
17. **Valmu, L.**, Paju, A., Lempinen, M., Kempainen, E. and Stenman, U-H. (2006) Application of proteomic technology in identifying Pancreatic Secretory Trypsin Inhibitor variants in urine of patients with pancreatitis. *Clin Chem* **52**, 73-81.
18. Hallikas, O.K., Aaltonen, J.M., von Koskull, H., Lindberg, L.A., **Valmu, L.**, Kalkkinen, N., Wahlström, T., Kataoka, H., Andersson, L., Lindholm, D. and Schröder, J. (2006) Identification of antibodies against HAI-1 and integrin $\alpha_6\beta_4$ as immunohistochemical markers of human villous cytotrophoblast. *J Histochem Cytochem* **54**, 745-752
19. Joensuu, J. J., Kotiaho, M., Teeri, T. H., **Valmu, L.**, Nuutila, A. M., Oksman-Caldentey, K-M. and Nikander-Teeri, V. (2006) Glycosylated F4 (K88) fimbrial adhesin, FaeG expressed in barley endosperm induces ETEC neutralizing antibodies in mice. *Transgenic Research* **15**, 359-373
20. Salonen, J., **Valmu, L.**, Rönholm G., Kalkkinen, N. and Vihinen, M. (2006) Proteome analysis of B cell maturation. *Proteomics* **6**, 5152-5168
21. **Valmu, L.**, Alftan, H., Hotakainen, K., Birken, S. and Stenman, U-H. (2006) Site-specific glycan analysis on human chorionic gonadotropin β -subunit from malignancy and pregnancy by liquid chromatography-electrospray mass spectrometry. *Glycobiology* **16**, 1207-1218
22. Rouhiainen, A., Tumova, S., **Valmu, L.**, Kalkkinen, N. and Rauvala, H. (2007) Analysis of proinflammatory activity of highly purified eukaryotic recombinant amphoterin (HMGB1) *J Leuk Biol* **81**, 49-58
23. Hyvryläinen, H-L., Pietiäinen, M., Lunden, T., Ekman, A., Gardemeister, M., Murtomäki-Repo, S., Antelmann, H., Hecker, M., **Valmu, L.**, Sarvas, M. and Kontinen, V. P. (2007) The density of negative charge in the cell wall influences two-component signal transduction in *Bacillus subtilis*. *Microbiology* **153**, 2126-2136
24. Itkonen, O., Helin, J., Saarinen, J., Kalkkinen, N., Ivanov, K.I., Stenman, U-H. and **Valmu, L.** (2008) Mass spectrometric detection of tyrosine sulfation in human pancreatic trypsinogens, but not in tumor-associated trypsinogen. *FEBS Journal* **275**, 289-301
25. Liiv, I., Rebane, A., Org, T., Saare, M., Maslovskaja, J., Kisans, K., Juronen, E., **Valmu, L.**, Bottomley, M., Kalkkinen, N. and Peterson, P. (2008) DNA-PK contributes to the phosphorylation of AIRE: importance in transcriptional activity. *BBA Mol Cell Res J* **1783**, 74-83
26. Mattson, J., **Valmu, L.**, Laakkonen, P., Stenman, U-H. and Koistinen, H. (2008) Structural characterization and anti-angiogenic properties of prostate specific antigen isoforms in seminal fluid. *Prostate* **68**, 945-954
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28. Koistinen, H., Koistinen, R., Zhang, W-M., **Valmu, L.** and Stenman, U-H. (2009) Nexin-1 inhibits the activity of human brain trypsin. *Neuroscience* **160**, 97-102.
29. Nystedt J, Anderson H, Hirvonen T, Impola U, Jaatinen T, Heiskanen A, Blomqvist M, Satomaa T, Natunen J, Saarinen J, Lehenkari P, **Valmu L** and Laine J (2010) Human CMP-N-acetylneuraminic acid hydroxylase (CMAH) is a Novel Stem Cell Marker Linked to Stem Cell-Specific Mechanisms. *Stem Cells* **28**:258-267
30. Suila H, Pitkänen V, Hirvonen T, Heiskanen A, Anderson H, Laitinen A, Natunen S, Miller-Podraza H, Satomaa T, Natunen J, Laitinen S, and **Valmu L** (2011) Are globoseries glycosphingolipids SSEA-3 and -4 markers for adult stem cells derived from human umbilical cord blood? *J Mol Cell Biol* **3**:99-107
31. Natunen S, Satomaa T, Pitkänen V, Salo H, Mikkola M, Natunen J, Otonkoski T and **Valmu L** (2011) The binding specificity of the marker antibodies Tra-1-60 and Tra-1-81 reveals a novel pluripotency associated type 1lactosamine epitope. *Glycobiology* **9**:1125
32. Hirvonen T., Suila H., Kotovuori A., Ritamo I., Heiskanen A., Sistonen P., Anderson H., Satomaa T., Saarinen J., Tiitinen S., Rabinä J., Laitinen S., Natunen S., and **Valmu L.** (2011) The i blood group antigen as a cord blood derived mesenchymal stem cell marker. *Stem Cells Dev* **21**: 455
33. Kolmeder C A, de Been M, Nikkilä J, Ritamo I, Mättö J, **Valmu L**, Palva A, Salonen A and de Vos W M (2012) Comparative metaproteomics and Diversity Analysis of Human Intestinal Microbiota Testifies for Temporal Stability of Core Functions. *Plos ONE* **7**: e29913
33. Karhemo P-R, Ravela S, Laakso M, Ritamo I, Tatti O, Mäkinen S, Goodison S, Stenman U-H, Hölttä E J, Hautaniemi S, **Valmu L**, Lehti K I, Laakkonen P M (2012) An optimized isolation of biotinylated cell surface proteins reveals novel players in cancer metastasis *J Proteomics* **77**:87
34. Pietilä M, Palomäki S, Lehtonen S, Ritamo I, **Valmu L**, Nystedt J, Laitinen S, Leskelä H-V, Sormunen R, Pesälä J, Nordström K, Vepsäläinen A and Lehenkari P (2012) Mitochondrial function and energy metabolism in umbilical cord blood- and bone marrow-derived mesenchymal stem cells. *Stem Cells Dev* **4**:575
35. Mikkola M, Toivonen S, Tamminen K, Alftan K, Tuuri T, **Valmu L**, Partanen J, Satomaa T, Natunen J, Saarinen J ja Otonkoski T (2012) Lectin from Erythrina cristagalli supports undifferentiated growth and differentiation of human pluripotent stem cells. *Stem Cells Dev* **5**:707
36. Nystedt J, Anderson H, Tikkanen J, Pietilä M, Hirvonen T, Heiskanen A, Satomaa T, Natunen S, Lehtonen S, Hakkarainen T, Takalo R, Laitinen S, **Valmu L** and Lehenkari P (2013) Cell surface structures influence lung clearance rate of systemically infused mesenchymal stromal cells. *Stem Cells* **2**:317
38. Kerkelä E, Hakkarainen T, Mäkelä T, Kilpinen L, Lehtonen S, Ritamo I, Pernu R, Pietilä M, Takalo R, Nikkilä J, Tikkanen J, Juvonen T, Laitinen S, **Valmu L**, Lehenkari P and Nystedt J (2013) Transient Proteolytic Modification of Mesenchymal Stromal Cells Decreases Lung Entrapment in vivo. *Stem Cell Transl Med* **7**:510
37. Natunen S, Lampinen M, Suila H, Rabinä J, Laitinen S, Reutter W and **Valmu L** (2013) Metabolic glycoengineering of mesenchymal stem cells with N-propanoylmannosamine. *Glycobiology* **8**:1004
38. Ivanov K I, Agalarov Y, **Valmu L**, Samuilova O, Liebl J, Houhou N, Maby-El Hajjami H, Norrmen C, Jaquet M, Miura N, Zangger N, Ylä-Herttuala S, Delorenzui M and Petrova T V Konstantin I. (2013) Phosphorylation Regulates FOXC2-Mediated Transcription in Lymphatic Endothelial Cells. *Mol Cell Biol* **19**:3749
39. Hirvonen T, Suila H, Tiitinen S, Natunen S, Laukkanen M-L, Kotovuori A, Reinman M, Satomaa T, Alftan K, Laitinen S, Takkinen K, Rabinä J and **Valmu L** (2013) Production of a recombinant antibody specific for i blood group antigen, a mesenchymal stem cell marker. *Biores Open Access* **5**:336

40. Ritamo I, Rabinä J, Natunen S and **Valmu L** (2013) Nanoscale reversed-phase liquid chromatography-mass spectrometry of permethylated N-glycans. *Anal Bioanal Chem* **8**:2469
41. Kilpinen L, Impola U, Sankkila L, Ritamo I, Aatonen M, Kilpinen S, Tuimala J, **Valmu L**, Levijoki J, Finckenberg P, Siljander P, Kankuri E, Mervaaala E and Laitinen S (2013) Extracellular membrane vesicles from umbilical cord blood-derived MSC protect against ischemic acute kidney injury, a feature that is lost after inflammatory conditioning. *J Extracell Vesicles* doi: 10.3402/jev.v2i0.21927
42. Peltoniemi H, Natunen S, Ritamo I, **Valmu L** and Rabinä J (2013) Novel data analysis tool for semiquantitative LC-MS-MS2 profiling of N-glycans. *J Glycoconj J* **2**:159
43. Leymarie N, Griffin PJ, Jonscher K, Kolarich D, Orlando R, McComb M, Zaia J, Aguilan J, Alley WR, Altmann F, Ball LE, Basumallick L, Bazemore-Walker CR, Behnken H, Blank MA, Brown KJ, Bunz SC, Cairo CW, Cipollo JF, Daneshfar R, Desaire H, Drake RR, Go EP, Goldman R, Gruber C, Halim A, Hathout Y, Hensbergen PJ, Horn DM, Hurum D, Jabs W, Larson G, Ly M, Mann BF, Marx K, Mechref Y, Meyer B, Möglinger U, Neusüß C, Nilsson J, Novotny MV, Nyalwidhe JO, Packer NH, Pompach P, Reiz B, Resemann A, Rohrer JS, Ruthenbeck A, Sanda M, Schulz JM, Schweiger-Hufnagel U, Sihlbom C, Song E, Staples GO, Suckau D, Tang H, Thaysen-Andersen M, Viner RI, An Y, **Valmu L**, Wada Y, Watson M, Windwarder M, Whittall R, Wührer M, Zhu Y and Zou C (2013) Interlaboratory study on differential analysis of protein glycosylation by mass spectrometry: the ABRF glycoprotein research multi-institutional study 2012. *Mol Cell Proteomics* **10**:2935
44. Suila H, Hirvonen T, Kotovuori A, Ritamo I, Kerkelä E, Anderson H, Natunen S, Tuimala J, Laitinen S, Nystedt J, Rabinä J and **Valmu L** (2014) Human umbilical cord blood derived mesenchymal stem cells display a novel interaction between P-selectin and galectin-1. *Scand J Immunol* **80**: 12
45. Suila H, Hirvonen T, Natunen S, Tuimala J, Laitinen S, Anderson H, Nystedt J, Rabinä J and **Valmu L** (2014) Extracellular O-linked N-Acetylglucosamine is enriched in human umbilical cord blood derived mesenchymal stem cells. *Biores Open Access* **2**:39

In addition 10 review articles and 20 published patents

Projects

The projects:

- Leukocyte adhesion molecule in immunological response
- Cancer biomarker modifications, eg glycosylation, sulfation
- Stem cell glycomics
- Immunoglobulin glycosylation
- Hematology biobanking
- Microbiological proteomics

Memberships

NA

Other Relevant Information

NA