

**CURRICULUM VITAE****FULL NAMES**

PARKKILA Seppo Matti Olavi

**DATE AND PLACE OF BIRTH**

11/8/66, Vihanti, Finland

**WWW-PAGES**[www.seppoparkkila.fi](http://www.seppoparkkila.fi)[www.tissuebiology.com](http://www.tissuebiology.com)[https://www.researchgate.net/profile/Seppo\\_Parkkila](https://www.researchgate.net/profile/Seppo_Parkkila)<https://www.linkedin.com/in/seppo-parkkila-21742533/>**CURRENT POSITIONS**

Professor of anatomy, University of Tampere, Finland	2008-
Vice-rector (research), University of Tampere, Finland	2016-

**EDUCATION**

Licentiate of Medicine, (M.D. degree), University of Oulu	02/19/91
Licensed physician	10/14/92
Doctor of Medical Science (Ph.D. degree), University of Oulu	12/13/94
Docent, University of Oulu	11/01/99
Specialist physician in Clinical Chemistry, University of Oulu	05/14/01

**PREVIOUS PROFESSIONAL APPOINTMENTS**

Acting junior lecturer (Department of Anatomy, University of Oulu)	1986-1990 (41 months)
General practitioner (in Municipal Health Services of Pudasjärvi and Raahe)	1989-1996 (9 months)
Resident (Oulu University Hospital)	1989-2001 (27 months)
Junior lecturer (Department of Anatomy, University of Oulu)	1991-1998 (7 months)
Acting senior lecturer (Department of Anatomy, University of Oulu)	1991-1993 (20 months)
Visiting scientist (Edward A. Doisy Department of biochemistry and molecular biology, Saint Louis University School of Medicine)	1996-1998 (24 months)
Senior lecturer (Department of Anatomy and Cell Biology, University of Oulu)	1998-2001 (14 months)
Acting professor (Department of Anatomy and Cell Biology, University of Oulu)	1998-2001 (22 months)
Chief physician (part-time) (Laboratory Centre, Tampere University Hospital)	2002-2007 (70 months)
Senior scientist (Academy of Finland)	2006-2007 (12 months)
Professor of medical technology and biotechnology (Institute of Medical Technology, University of Tampere)	2002-2007 (60 months)

**CURRENT EXTERNAL FUNDING**

Academy of Finland  
 Pirkanmaa Hospital District  
 Sigrid Juselius Foundation  
 Jane & Aatos Erkkö Foundation

**AWARDS**

Medix-award	1992
Carl Bertil Laurell-award	1998
Dako-award	1999
Teacher of the year (C I, Univ. of Tampere School of Medicine)	2008
Teacher of the year (C II, Univ. of Tampere School of Medicine)	2009
Teacher of the year (C II, Univ. of Tampere School of Medicine)	2010
Teacher of the year (C II, Univ of Tampere School of Medicine)	2011
Teacher of the year (Univ. of Tampere School of Medicine)	2012
Teacher of the year (Univ. of Tampere School of Medicine)	2013
Teacher of the year (C II, Univ of Tampere School of Medicine)	2014
Teacher of the year (Univ. of Tampere School of Medicine)	2015

**SUPERVISED MSc THESES**

Milla Hänninen, MSc (Biotechnology)	2005
Mika Hilvo, MSc (Biotechnology)	2005
Piia Halmi, MSc (Biotechnology)	2006
Heini Kallio, MSc (Biotechnology)	2007
Alise Hyrskyluoto, MSc (Biotechnology)	2009
Henna Luukkonen, MSc (Biotechnology)	2009
Sina Saari, MSc (Biotechnology)	2011
Ashok Aspatwar, MSc (Bioinformatics)	2011
Maarit Patrikainen, MSc (Bioinformatics)	2012
Harlan Barker, MSc (Bioinformatics)	2013

**SUPERVISED PhD THESES**

Jyrki Kivelä, DDS, PhD	1999
Juha Saarnio, MD, PhD	2000
Pepe Karhumaa, MD, PhD	2002
Antti Kivelä, MD, PhD	2003
Jokke Hannuksela, MD, PhD	2004
Mari Leppilampi, PhD	2006
Mika Hilvo, PhD	2008
Alejandra Rodriguez Martinez, PhD	2009
Fatemeh Bootorabi, PhD	2011
Joonas Haapasalo, MD, PhD	2011
Heini Kallio, PhD	2011
Piritta Hynninen, MD, PhD	2014
Ashok Aspatwar, PhD	2014
Leo Syrjänen, MD, PhD	2015
Reza Zolfaghari Emameh, PhD	2016

**MEMBERSHIPS IN ACADEMIC SOCIETIES**

Duodecim (Finnish College of Physicians), member	1989-
Anatomici Fenniae, member (Board member 2008-, Chairman 2011-2012, 2016-)	1998-

**EXPERIENCE AS A SCIENTIFIC EVALUATOR**

Referee for several international journals, such as:

Acta Obstet. Gynecol. Scand.	Clin. Biochem.
Arch. Oral. Biol.	Clin. Chem. Lab. Med.
Am. J. Gastroenterol.	Comp. Biochem. Physiol.
Am. J. Physiol.	Eur. J. Dermatol.
APMIS	FEBS Lett.
Biochem. Biophys. Acta	Haematologica
Bioorg. Med. Chem. Lett.	J. Hepatol.
BMC Cancer	J. Histochem. Cytochem.
Br. J. Cancer	J. Med. Chem.
Cancer Lett.	Mol. Membr. Biol.
Cancer Ther.	Proc. Natl. Acad. Sci. U.S.A.

Referee for doctoral thesis:

Darren J. Grubb, University of Melbourne, Parkville, Australia	1999
Petra Anttila, University of Tampere	2004
Kaisa Ivaska, University of Turku	2005
Jenni Jalkanen, University of Turku	2006
Ru Gao, University of Helsinki	2007
Sanna Virtanen, University of Turku	2010
Mika Kaakinen, University of Oulu	2011
Anniina Färkkilä, University of Helsinki	2012
Anna Norppa, University of Oulu	2012
Emmi Peurala, University of Oulu	2013
Elena Atzori, University of Cagliari, Italy	2014
Dhiman Sankar Pal, Indian Institute of Science Education and Research, India	2017

Opponent for doctoral thesis:

Mari Ervasti, University of Kuopio	2008
Hanna Haveri, University of Helsinki	2008
Jonas Nyman, University of Turku	2011

External evaluator of EUROXY project (FP6 European Union) 2006

Evaluator for associate research professor appointment,  
Department of Biochemistry and Molecular Biology, Saint Louis University  
School of Medicine, St. Louis, MO, U.S.A. 2001

Evaluator for professor (anatomy) appointment, University of Helsinki,  
Faculty of Medicine 2011

Evaluator for professor (tissue and cell biology) appointment, University of Eastern Finland, Faculty of Health Sciences	2013
Chairman of the committee for pre-evaluation of associate professor candidates, School of Medicine, University of Tampere	2013
Evaluator for professor (anatomy) appointment, Arab Gulf University, Bahrain	2017
Member of the committee for evaluation of adjunct professor (docent) candidates, BioMediTech, University of Tampere	2007-2016
Evaluator several times for adjunct professor (docent) positions in Finnish universities	

### **OTHER ACTIVITIES**

Director of M.D., Ph.D. program, University of Oulu	2000-2001
Director of M.D., Ph.D. program, University of Tampere	2008-2015
Chairman of steering group of Biotechnology curriculum, University of Tampere	2002-2006
Board member of the Institute of Medical Technology, University of Tampere	2004-2007
Board member of the School of Medicine, University of Tampere	2011-2015
Member of the postgraduate study committee, Institute of Biomedical Technology (BioMediTech), University of Tampere,	2011-2016
Vice chairman of the postgraduate study committee, School of Medicine, University of Tampere	2014-2016
Member of the Organizing Committee: the 6 <sup>th</sup> International Conference on Carbonic Anhydrases, Smolenice, Slovak Republic	2003
Member of the Organizing Committee: the 8 <sup>th</sup> International Conference on Carbonic Anhydrases, Florence, Italy	2009
Member of the Organizing Committee: the 9 <sup>th</sup> International Conference on Carbonic Anhydrases, Antalya, Turkey	2012
Coordinator of DeZnIT project (FP6 European Union)	2009-2010
Scientific advisor of METOXIA project (FP7 European Union)	2010-2014
Advisor of Alliance4Life project (Horizon 2020)	2018-
Editorial board member of the Journal of Enzyme Inhibition and Medicinal Chemistry	2013-
Chairman of the Research Council (University of Tampere)	2016-
Chairman of the Preparatory Group for Tampere3 research	2017-
Board member, FinnMedi Ltd	2016-2018
Advisory board member, The Finnish Medical Foundation	2018-2020
Attendee of the leadership training program, University of Tampere	2009-2010

Chairman of the FinELib strategic group	2018-
Steering group member of the Open Science and Data project (UNIFI)	2017-2018
Member of Vesilahti Evangelical-Lutheran parish council	2007- (chairman 2011-)
Candidate for the parliament of Finland (National Coalition Party)	2015
Participant of National Defence Course 224	2018

#### **MILITARY RANK**

Lieutenant M.C.	2012
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#### **PATENTS**

Treatment of Mammalian disorders mediated by alpha-carbonic anhydrase isoforms. Taiwanese patent I565466 (099117619), filing date June 1, 2010, duration January 11, 2017-May 31, 2030.

Treatment of Mammalian Disorders Mediated by Alpha-Carbonic Anhydrase Isoforms. US Patent 9,623,025, filing date June 1, 2010, granted April 18, 2017.

Treatment of Mammalian disorders mediated by alpha-carbonic anhydrase isoforms. European patent 2437745, filing date June 1, 2010, granted August 23, 2017.

**PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS**

*h-index* 54, (source Scopus, updated on 08/13/18)

Seppo Parkkila

1. Parkkila S, Rajaniemi H: Carbonic anhydrase activity in peripheral T-lymphocytes and appearance of the activity during their maturation in the thymus. A histochemical demonstration.  
***Histochemistry*** 1989;91:479-482.
2. Parkkila S, Kaunisto K, Rajaniemi L, Kumpulainen T, Jokinen K, Rajaniemi H: Immunohistochemical localization of carbonic anhydrase isoenzymes VI, II and I in human parotid and submandibular glands.  
***J Histochem Cytochem*** 1990;38:941-947.
3. Kaunisto K, Parkkila S, Tammela T, Rönnerberg L, Rajaniemi H: Immunohistochemical localization of carbonic anhydrase isoenzymes in the human male reproductive tract.  
***Histochemistry*** 1990;381-386.
4. Parkkila S, Kaunisto K, Kellokumpu S, Rajaniemi H: A high activity carbonic anhydrase isoenzyme (CA II) is present in mammalian spermatozoa.  
***Histochemistry*** 1991;95:477-482.
5. Niemelä O, Juvonen T, Parkkila S: Immunohistochemical demonstration of acetaldehyde-modified epitopes in human liver after alcohol consumption.  
***J Clin Invest*** 1991;87:1367-1374.
6. Parkkila A-K, Parkkila S, Juvonen T, Rajaniemi H: Carbonic anhydrase isoenzymes II and I are present in the zona glomerulosa cells of the human adrenal gland.  
***Histochemistry*** 1993;99:37-41.
7. Parkkila S, Parkkila A-K, Kaunisto K, Waheed A, Sly WS, Rajaniemi H: Location of a membrane-bound carbonic anhydrase isoenzyme (CA IV) in the human male reproductive tract.  
***J Histochem Cytochem*** 1993;41:751-757.
8. Halsted CH, Villanueva J, Chandler CJ, Ruebner B, Munn RJ, Parkkila S, Niemelä O: Centrilobular distribution of acetaldehyde and collagen in the ethanol-fed micropig.  
***Hepatology*** 1993;18:954-960.
9. Parkkila S, Rajaniemi H, Kellokumpu S: Polarized expression of a band 3-related protein in mammalian sperm cells.  
***Biol Reprod*** 1993;49:326-331.
10. Parkkila S, Parkkila A-K, Vierjoki T, Ståhlberg T, Rajaniemi H: Competitive time-resolved immunofluorometric assay for quantifying carbonic anhydrase VI in saliva.  
***Clin Chem*** 1993;39:2154-2157.
11. Juvonen T, Räsänen O, Reinilä A, Parkkila S, Nissinen J, Kairaluoma MI, Sormunen R, Niemelä O: Segmental mediolytic arteritis - Electronmicroscopic and immunohistochemical study.  
***Eur J Vasc Surg*** 1994;8:70-77.
12. Mühlhauser J, Crescimanno C, Rajaniemi H, Parkkila S, Milovanov AP, Castellucci M, Kaufmann P: Immunohistochemistry of carbonic anhydrase in human placenta and fetal membranes.  
***Histochemistry*** 1994;101:91-98.

13. Parkkila S, Parkkila A-K, Juvonen T, Rajaniemi H: Distribution of carbonic anhydrase isoenzymes I, II and VI in the human alimentary tract.  
**Gut** 1994;35:646-650.
14. Niemelä O, Parkkila S, Ylä-Herttua S, Halsted C, Witztum JL, Lanca A, Israel Y: Covalent protein adducts in the liver as a result of ethanol metabolism and lipid peroxidation.  
**Lab Invest** 1994;70:537-546.
15. Sasano H, Kato K, Nagura H, Parkkila S, Parkkila A-K, Rajaniemi H, Sugai N: Carbonic anhydrases in the human adrenal gland and its disorders - Immunohistochemical and biochemical studies of the enzymes.  
**Endocrine Pathol** 1994;5:100-106.
16. Parkkila A-K, Parkkila S, Serlo W, Reunanen M, Rajaniemi H: A competitive dual-label time-resolved immunofluorometric assay for simultaneous detection of carbonic anhydrase I and II in cerebrospinal fluid.  
**Clin Chim Acta** 1994;230:81-89.
17. Juvonen T, Parkkila S, Parkkila A-K, Niemelä O, Lajunen LHJ, Kairaluoma MI, Perämäki P, Rajaniemi H: High-activity carbonic anhydrase isoenzyme (CA II) in human gallbladder epithelium.  
**J Histochem Cytochem** 1994;42:1393-1397.
18. Juvonen T, Parkkila S, Lepojärvi M, Niemelä O: Demonstration of a bioactive elastin-derived peptide (Val-Gly-Val-Ala-Pro-Gly) in vascular lesions characterized by the segmental destruction of media.  
**Ann Chir Gynaecol** 1994;83:296-302.
19. Parkkila S, Parkkila A-K, Juvonen T, Lehto V-P, Rajaniemi H: Immunohistochemical demonstration of the carbonic anhydrase isoenzymes I and II in pancreatic tumours.  
**Histochem J** 1995;27:133-138.
20. Parkkila S, Parkkila A-K, Rajaniemi H: Circadian periodicity in salivary carbonic anhydrase VI concentration.  
**Acta Physiol Scand** 1995;154:205-211.
21. Kaunisto K, Parkkila S, Parkkila A-K, Waheed A, Sly WS, Rajaniemi H: Expression of carbonic anhydrase isoenzymes IV and II in rat epididymal duct.  
**Biol Reprod** 1995;52:1350-1357.
22. Tsukamoto H, Horne W, Kamimura S, Niemelä O, Parkkila S, Ylä-Herttua S, Brittenham GM: Experimental liver cirrhosis induced by alcohol and iron.  
**J Clin Invest** 1995;96:620-630.
23. Parkkila S, Ahonen A, Torniainen P, Heikkilä J, Salmela P: Detection of cervical metastases of thyroid medullary carcinoma by MoAb anti-CEA scintigraphy and immunohistochemistry.  
**Eur J Nucl Med** 1995;22:1064-1068.
24. Niemelä O, Parkkila S, Ylä-Herttua S, Villanueva J, Ruebner B, Halsted CH: Sequential acetaldehyde production, lipid peroxidation, and fibrogenesis in micropig model of alcohol-induced liver disease.  
**Hepatology** 1995;22:1208-1214.
25. Fleming RE, Parkkila S, Parkkila A-K, Rajaniemi H, Waheed A, Sly WS: Carbonic anhydrase IV expression in rat and human gastrointestinal tract. Regional, cellular, and subcellular localization.  
**J Clin Invest** 1995;96:2907-2913.

26. Parkkila A-K, Herva R, Parkkila S, Rajaniemi H: Immunohistochemical demonstration of human carbonic anhydrase isoenzyme II in brain tumours.  
**Histochem J** 1995;27:974-982.
27. Parkkila S, Niemelä O, Britton RS, Brown KE, Ylä-Herttuala S, O'Neill R, Bacon B: Vitamin E decreases hepatic levels of aldehyde-derived peroxidation products in rats with iron overload.  
**Am J Physiol** 1996;270:G376-G384.
28. Parkkila A-K, Parkkila S, Rajaniemi H: Carbonic anhydrase isoenzyme II is located in corticotrophs of the human pituitary gland.  
**J Histochem Cytochem** 1996;44:245-250.
29. Parkkila S, Parkkila A-K, Juvonen T, Waheed A, Sly WS, Saarnio J, Kaunisto K, Kellokumpu S, Rajaniemi H: Membrane-bound carbonic anhydrase IV is expressed in the luminal plasma membrane of the human gallbladder epithelium.  
**Hepatology** 1996;24:1104-1108.
30. Parkkila S, Parkkila A-K: Carbonic anhydrase in the alimentary tract. Roles of the different isozymes and salivary factors in the maintenance of optimal conditions in the gastrointestinal canal.  
**Scand J Gastroenterol** 1996;31:305-317.
31. Pastoreková S, Parkkila S, Parkkila A-K, Opavský R, Zelník V, Saarnio J, Pastorek J: Carbonic anhydrase IX, MN/CA IX: Analysis of stomach complementary DNA sequence and expression in human and rat alimentary tracts.  
**Gastroenterology** 1997;112:398-408.
32. Parkkila S, Waheed A, Britton RS, Feder JN, Tsuchihashi Z, Schatzman RC, Bacon BR, Sly WS: Immunohistochemistry of HLA-H, the protein defective in patients with hereditary hemochromatosis, reveals unique pattern of expression in gastrointestinal tract.  
**Proc Natl Acad Sci USA** 1997;94:2534-2539.
33. Parkkila A-K, Parkkila S, Reunanen M, Niemelä O, Tuisku S, Rautakorpi I, Rajaniemi H: Carbonic anhydrase II in the cerebrospinal fluid: its value as a disease marker.  
**Eur J Clin Invest** 1997;27:392-397.
34. Parkkila S, Parkkila A-K, Lehtola J, Reinilä A, Södervik H-J, Rannisto M, Rajaniemi H: Salivary carbonic anhydrase protects gastroesophageal mucosa from acid injury.  
**Digest Dis Sci** 1997;42:1013-1019.
35. Feder JN, Tsuchihashi Z, Irrinki A, Lee VK, Mapa FA, Morikang E, Prass CE, Starnes SM, Wolff RK, Parkkila S, Sly WS, Schatzman RC: The hemochromatosis founder mutation in HLA-H disrupts  $\beta_2$ -microglobulin interaction and cell surface expression.  
**J Biol Chem** 1997;272:14025-14028.
36. Kivelä J, Parkkila S, Metteri J, Parkkila A-K, Toivanen A, Rajaniemi H: Salivary carbonic anhydrase VI concentration and its relation to basic characteristics of saliva in young men.  
**Acta Physiol Scand** 1997;161:221-225.
37. Waheed A, Parkkila S, Zhou XY, Tomatsu S, Tsuchihashi Z, Feder JN, Schatzman RC, Britton RS, Bacon BR, Sly WS: Hereditary hemochromatosis: Effects of C282Y and H63D mutations on association with  $\beta_2$ -microglobulin, intracellular processing, and cell surface expression of the HFE protein in COS-7 cells.  
**Proc Natl Acad Sci USA** 1997;94:12384-12389.
38. Kivelä J, Parkkila S, Waheed A, Parkkila A-K, Sly WS, Rajaniemi H: Secretory carbonic anhydrase isoenzyme (CA VI) in human serum.  
**Clin Chem** 1997;43:2318-2322.



39. Parkkila S, Waheed A, Britton RS, Bacon BR, Zhou XY, Tomatsu S, Fleming RE, Sly WS: Association of the transferrin receptor in human placenta with HFE, the protein defective in hereditary hemochromatosis.  
***Proc Natl Acad Sci USA*** 1997;94:13198-13202.
40. Saarnio J, Parkkila S, Parkkila A-K, Waheed A, Casey MC, Zhou ZY, Pastoreková S, Pastorek J, Karttunen T, Haukipuro K, Kairaluoma MI, Sly WS: Immunohistochemistry of carbonic anhydrase isozyme IX (MN/CA IX) in human gut reveals polarized expression in the epithelial cells with the highest proliferative capacity.  
***J Histochem Cytochem*** 1998;46:497-504.
41. Satta J, Laurila A, Pääkkö P, Haukipuro K, Sormunen R, Parkkila S, Juvonen T: Chronic inflammation and elastin degradation in abdominal aortic aneurysm disease: an immunohistochemical and electron microscopic study.  
***Eur J Vasc Surg*** 1998;15:313-319.
42. Zhou XY, Tomatsu S, Fleming RE, Parkkila S, Waheed A, Jiang J, Fei Y, Brunt EM, Ruddy DA, Prass CE, Schatzman RC, O'Neill R, Britton RS, Bacon BR, Sly WS: HFE gene knockout produces mouse model of hereditary hemochromatosis.  
***Proc Natl Acad Sci USA*** 1998;95:2492-2497.
43. Saarnio J, Parkkila S, Parkkila A-K, Haukipuro K, Pastoreková S, Pastorek J, Kairaluoma MI, Karttunen TJ: Immunohistochemical study of colorectal tumors for expression of a novel transmembrane carbonic anhydrase, MN/CA IX, with potential value as a marker of cell proliferation.  
***Am J Pathol*** 1998;153:279-285.
44. Parkkila A-K, Scarim AL, Parkkila S, Waheed A, Corbett JA, Sly WS: Expression of carbonic anhydrase V in pancreatic  $\beta$ -cells suggests role for mitochondrial carbonic anhydrase in insulin secretion.  
***J Biol Chem*** 1998;273:24620-24623.
45. Niemelä O, Parkkila S, Pasanen M, Iimuro Y, Bradford B, Thurman RG: Early alcoholic liver injury: Formation of protein adducts with acetaldehyde and lipid peroxidation products, and expression of CYP2E1 and CYP3A.  
***Alcohol: Clin Exp Res*** 1998;22:2118-2124.
46. Satta J, Ahonen A, Parkkila S, Leinonen L, Apaja-Sarkkinen M, Lepojärvi M, Juvonen T: Multiple endocrine neoplastic-associated thymic carcinoid tumour in close relatives: octreotide scan as a new diagnostic and follow-up modality. Two case reports.  
***Scand Cardiovasc J*** 1999;33:49-53.
47. Kivelä J, Parkkila S, Parkkila A-K, Rajaniemi H: A low concentration of carbonic anhydrase isoenzyme VI in whole saliva is associated with caries prevalence.  
***Caries Res*** 1999;33:178-184.
48. Leinonen J, Kivelä J, Parkkila S, Parkkila A-K, Rajaniemi H: Salivary carbonic anhydrase isoenzyme VI is located in the human enamel pellicle.  
***Caries Res*** 1999;33:185-190.
49. Saarnio J, Parkkila S, Parkkila A-K, Waheed A, Karttunen T, Sly WS: Cell-specific expression of mitochondrial carbonic anhydrase in the human and rat gastrointestinal tract.  
***J Histochem Cytochem*** 1999;47:517-524.
50. Waheed A, Parkkila S, Saarnio J, Fleming RE, Zhou XY, Tomatsu S, Britton RS, Bacon BR, Sly WS: Association of HFE protein with transferrin receptor in crypt enterocytes of human duodenum.  
***Proc Natl Acad Sci USA*** 1999;96:1579-1584.

51. Niemelä O, Parkkila S, Britton RS, Janney CG, Brunt EM, Bacon BR: Hepatic lipid peroxidation in patients with hereditary hemochromatosis and alcohol abuse.  
***J Lab Clin Med*** 1999;133:451-460.
52. Niemelä O, Parkkila S, Pasanen M, Viitala K, Villanueva JA, Halsted CH: Induction of cytochrome P450 enzymes and generation of protein-aldehyde adducts are associated with sex-dependent sensitivity to alcohol-induced liver disease in micropigs.  
***Hepatology*** 1999;30:1011-1017.
53. Parkkila S, Halsted CH, Väänänen HK, Niemelä O: Expression of testosterone-dependent enzyme, carbonic anhydrase III, and oxidative stress in experimental alcoholic liver disease.  
***Digest Dis Sci*** 1999;44:2205-2213.
54. Kivelä J, Parkkila S, Parkkila A-K, Leinonen J, Rajaniemi H: Salivary carbonic anhydrase isoenzyme VI.  
***J Physiol*** 1999;520:315-320.
55. Karhumaa P, Parkkila S, Türeci Ö, Waheed A, Grubb JH, Shah G, Parkkila A-K, Kaunisto K, Tapanainen J, Sly WS, Rajaniemi H: Identification of carbonic anhydrase XII as the membrane isozyme expressed in the normal human endometrial epithelium.  
***Mol Hum Reprod*** 2000;6:68-74.
56. Kivelä A, Parkkila S, Saarnio J, Karttunen TJ, Kivelä J, Parkkila A-K, Waheed A, Sly WS, Grubb JH, Shah G, Türeci Ö, Rajaniemi H: Expression of a Novel Transmembrane Carbonic Anhydrase Isozyme XII in Normal Human Gut and Colorectal Tumors.  
***Am J Pathol*** 2000;156:577-584.
57. Parkkila S, Rajaniemi H, Parkkila A-K, Kivelä J, Waheed A, Pastoreková S, Pastorek J, Sly WS: Carbonic anhydrase inhibitor suppresses invasion of renal cancer cells in vitro.  
***Proc Natl Acad Sci USA*** 2000;97:2220-2224.
58. Parkkila S, Parkkila A-K, Waheed A, Britton RS, Zhou XY, Fleming RE, Tomatsu S, Bacon BR, Sly WS: Cell surface expression of HFE protein in epithelial cells, macrophages, and monocytes.  
***Haematologica*** 2000;85:340-345.
59. Karhumaa P, Parkkila S, Waheed A, Parkkila A-K, Kaunisto K, Tucker PW, Huang C-J, Sly WS, Rajaniemi H: Nuclear NonO/p54<sup>nrb</sup> protein is a nonclassical carbonic anhydrase.  
***J Biol Chem*** 2000;275:16044-16049.
60. Ghadour MS, Parkkila A-K, Parkkila S, Waheed A, Sly WS: Mitochondrial carbonic anhydrase (CA V) in the nervous system: expression in neuronal and glial cells.  
***J Neurochem*** 2000;75:2212-2220.
61. Rintala J, Jaatinen P, Parkkila S, Sarviharju M, Kiianmaa K, Hervonen A, Niemelä O: Evidence of acetaldehyde-protein adduct formation in rat brain after lifelong consumption of ethanol.  
***Alcohol Alcoholism*** 2000;35:458-63.
62. Jokelainen K, Parkkila S, Salaspuro M, Niemelä O: Covalent adducts of proteins with acetaldehyde in the liver as a result of acetaldehyde administration in drinking water.  
***J Hepatol*** 2000;33:926-932.
63. Niemelä O, Parkkila S, Juvonen RO, Viitala K, Gelboin HV, Pasanen M: Cytochromes P450 2A6, 2E1, and 3A and production of protein-aldehyde adducts in the liver of patients with alcoholic and non-alcoholic liver diseases.  
***J Hepatol*** 2000;33:893-901.

64. Kivelä AJ, Parkkila S, Saarnio J, Karttunen TJ, Kivelä J, Parkkila A-K, Pastoreková S, Pastorek J, Waheed A, Sly WS, Rajaniemi H: Expression of transmembrane carbonic anhydrase isoenzymes IX and XII in normal human pancreas and pancreatic tumours.  
***Histochem Cell Biol*** 2000;114:197-204.
65. Parkkila S, Parkkila A-K, Saarnio J, Kivelä J, Karttunen TJ, Kaunisto K, Waheed A, Sly WS, Türeci Ö, Virtanen I, Rajaniemi H: Expression of the membrane-associated carbonic anhydrase isozyme XII in the human kidney and renal tumors.  
***J Histochem Cytochem*** 2000;48:1601-1608.
66. Parkkila S, Parkkila A-K, Rajaniemi H, Shah GN, Grubb JH, Waheed A, Sly WS: Expression of membrane-associated carbonic anhydrase XIV on neurons and axons in mouse and human brain.  
***Proc Natl Acad Sci USA*** 2001;98:1918-1923.
67. Makkonen K, Viitala K, Parkkila S, Niemelä O: Serum IgG and IgE antibodies against mold-derived antigens in patients with symptoms of hypersensitivity.  
***Clin Chim Acta*** 2001;305:89-98.
68. Leinonen J, Parkkila S, Kaunisto K, Koivunen P, Rajaniemi H: Secretion of carbonic anhydrase isoenzyme VI (CA VI) from human and rat lingual serous von Ebner's glands.  
***J Histochem Cytochem*** 2001;49:657-662.
69. Worrall S, Niemelä O, Parkkila S, Peters TJ, Preedy VR: Protein adducts in type I and type II fibre predominant muscles of the ethanol-fed rat: preferential localisation in the sarcolemmal and sub-sarcolemmal region.  
***Eur J Clin Invest*** 2001;31:723-730.
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