MED MEDIZINISCHE FAKULTÄT

Forschungsbericht 2024

Institut für Humangenetik

INSTITUT FÜR HUMANGENETIK

Leipziger Str. 44, 39120 Magdeburg
Tel. 49 (0)391 67 15062, Fax 49 (0)391 67 15066
martin.zenker@med.ovgu.de

1. LEITUNG

Prof. Dr. Martin Zenker

2. HOCHSCHULLEHRER/INNEN

PD Dr. Ilse Wieland

3. FORSCHUNGSPROFIL

Genetische Ursachen und molekulare Pathophysiologie angeborener Entwicklungsstörungen

- RASopathien (Schwerpunktthema)
- Syndromale Formen glomerulärer Nephropathien
- Erkrankungen durch Defekte von Isoformen des Nuclear Factor 1 (NFI)
- Fraser-Syndrom und verwandte Erkrankungen
- Johanson-Blizzard-Syndrom
- Adams-Oliver-Syndrom
- Verschiedene Formen mentaler Retardierung

Endokrinologie und Wachstum

- Genetik und Pathophysiologie des kongenitalen Hyperinsulinismus
- Wachstumsstörungen / Skelettdysplasien

Neurogenetik

- Molekulargenetische Analyse neuromuskulärer Erkrankungen
- Genetisch bedingte Epilepsien

Tumorgenetik

- Zytogenetische und molekularzytogenetische Charakterisierung von Leukämien
- Hereditäre Tumorprädispositionssyndrome und genetische Dispositionen bei kindlichen Tumoren
- Mosaik-Erkrankungen durch onkogene Mutationen (neurokutane Mosaik-Erkrankungen, vaskuläre Malformationen)

4. SERVICEANGEBOT

Humangenetische Beratung und Begutachtung
Interdisziplinäre Spezialsprechstunden

- RASopathien (Noonan-Syndrom und verwandte Erkrankungen, Neurofibromatose)
- Entwicklungsverzögerung / Mentale Retardierung

- Erbliche Tumorerkrankungen

Molekulargenetische Diagnostik / Analysen

- Gezielte Genanalysen und lokuspezifische Spezialanalysen (Sanger-Sequenzierung, MLPA, Southern-Blot, Fragmentanalysen etc.)
- Multigen-Panel-Analysen für viele Indikationen
- Exom- / Trio-Exom-Sequenzierung
- Genomsequenzierung
- Mikroarray-Analysen (molekulare Karyotypisierung, Expressionsarrays)
- Transkriptom-Analysen
- Metagenomik

Zytogenetische / molekular-zytogenetische Diagnostik / Analysen

- Prä- und postnatale Chromosomenanalyse
- Spezifische FISH-Analysen
- Tumorzytogenetische und FISH-Analysen in der Leukämiediagnostik

5. METHODIK

Methodik in der Molekulargenetik

- Sanger-Sequenzierung (Kapillar-Sequenzer, Applied Biosystems)
- Next-Generation-Sequenzierung (NGS) (Illumina)
- Mikroarray-Plattform (Affymetrix)
- Southern-Blotting
- Gelelektrophorese
- Spezialmethoden
- Genomeditierung / Mutagenese mit CRISPR/Cas9
- Robotik

Methodik in der Zytogenetik

- Mikroskopische Chromosomenanalysen mit verschiedenen Färbe-Verfahren
- Fluoreszenz-in-situ-Hybridisierung
- Zellkultivierung

6. KOOPERATIONEN

- Universitätsmedizin Greifswald

7. VERÖFFENTLICHUNGEN

BEGUTACHTETE ZEITSCHRIFTENAUFSÄTZE

Borroto, Maria Carla; Michaud, Coralie; Hudon, Chloé; Agrawal, Pankaj B.; Agre, Katherine; Applegate, Carolyn D.; Beggs, Alan H.; Bjornsson, Hans T.; Callewaert, Bert; Chen, Mei-Jan; Curry, Cynthia J.; Devinsky, Orrin; Dudding-Byth, Tracy; Fagan, Kelly; Finnila, Candice R.; Gavrilova, Ralitza; Genetti, Casie A.; Hiatt, Susan M.; Hildebrandt, Friedhelm; Wojcik, Monica H.; Kleefstra, Tjitske; Kolvenbach, Caroline; Korf, Bruce R.; Kruszka, Paul; Li, Hong; Litwin, Jessica; Marcadier, Julien; Platzer, Konrad; Blackburn, Patrick R.; Reijnders, Margor R. F.; Reutter, Heiko; Schanze, Ina; Shieh, Joseph T.; Stevens, Cathy A.; Valivullah, Zaheer; Boogaard, Marie-José van den; Klee, Eric W.; Campeau, Philippe M.
A genotype/phenotype study of KDM5B-associated disorders suggests a pathogenic effect of dominantly inherited missense variants
Genes - Basel : MDPI, Bd. 15 (2024), Heft 8, Artikel 1033, insges. 13 S.
[Imp.fact.: 2.8]

Dentici, Maria Lisa; Niceta, Marcello; Lepri, Francesca Romana; Mancini, Cecilia; Priolo, Manuela; Bonnard, Adeline Alice; Cappelletti, Camilla; Leoni, Chiara; Ciolfi, Andrea; Pizzi, Simone; Cordeddu, Viviana; Rossi, Cesare; Ferilli, Marco; Mucciolo, Malfalda; Colona, Vito Luigi; Fauth, Christine; Bellini, Melissa; Biasucci, Giacomo; Sinibaldi, Lorenzo; Briuglia, Silvana; Gazzin, Andrea; Carli, Diana; Memo, Luigi; Trevisson, Eva; Schiavariello, Conetta; Luca, Maria; Novelli, Antonio; Michot, Caroline; Sweertvaegher, Anne; Germanaud, David; Scarano, Emanuela; Luca, Alessandro De; Zampino, Giuseppe; Zenker, Martin; Mussa, Alessandro; Dallapiccola, Bruno; Cavé, Helene; Digilio, Maria Cristina; Tartaglia, Marco
Loss-of-function variants in ERF are associated with a Noonan syndrome-like phenotype with or without craniosynostosis
European journal of human genetics - Basingstoke : Stockton Press, Bd. 32 (2024), Heft 8, S. 954-963
[Imp.fact.: 3.7]

Draaisma, Fiele; Leenders, Erika K. S. M.; Erasmus, Corrie E.; Braakman, Hilde M. H.; Burgers, Melanie C. J.; Coppens, Catelijne H.; Rinne, Tuula; Zenker, Martin; Tartaglia, Marco; Reintjes, Wesley; Voermans, Nicol C.; Engelen, Baziel Gerardus Maria van; Alfen, Nens van; Draaisma, Jos M. T.
Nerve enlargement in patients with Noonan syndrome - a retrospective cohort study
American journal of medical genetics - New York, NY : Wiley-Liss, Bd. 194 (2024), Heft 11, Artikel e63810, insges. 11 S.
[Imp.fact.: 1.7]

Figueroa, Karla P.; Gross, Caspar; Buena Atienza, Elena; Paul, Sharan; Gandelman, Mandi; Kakar, Naseebullah; Sturm, Marc; Casadei, Nicolas; Admard, Jakob; Park, Joohyun; Zühlke, Christine; Hellenbroich, Yorck; Pozojevic, Jelena; Balachandran, Saranya; Händler, Kristian; Zittel, Simone; Timmann-Braun, Dagmar; Erdlenbruch, Friedrich; Herrmann, Laura; Feindt, Thomas; Zenker, Martin; Klopstock, Thomas; Dufke, Claudia; Scoles, Daniel R.; Koeppen, Arnulf; Spielmann, Malte; Rieß, Olaf; Ossowski, Stephan; Haack, Tobias; Pulst, Stefan M.
A GGC-repeat expansion in ZFHX3 encoding polyglycine causes spinocerebellar ataxia type 4 and impairs autophagy. Letter
Nature genetics - London : Macmillan Publishers Limited, part of Springer Nature, Bd. 56 (2024), Heft 6, S. 1080-1089, insges. 21 S.
[Imp.fact.: 31.7]

Gescher, Dorothee Maria; Schanze, Denny; Vavra, Peter; Wolff, Philip; Zimmer, Geraldine; Zenker, Martin; Frodl, Thomas; Schmahl, Christian
Differential methylation of OPRK1 in borderline personality disorder is associated with childhood trauma
Molecular psychiatry - [London]: Springer Nature, Bd. 29 (2024), Heft 12, S. 3734-3741, insges. 8 S.
[Imp.fact.: 9.6]

Guhathakurta, Debarpan; Selzam, Franziska; Petrušková, Aneta; Weiss, Eva-Maria; Akdaş, Enes Yağız; Montenegro-Venegas, Carolina; Zenker, Martin; Fejtová, Anna
Rasopathy-associated mutation Ptpn11D61Y has age-dependent effect on synaptic vesicle recycling
Cellular and molecular neurobiology - Dordrecht : Springer Science + Business Media B.V, Bd. 44 (2024), Artikel 77, insges. 10 S.
[Imp.fact.: 3.6]

Kapp, Friedrich; Bazgir, Farhad; Mahammadzade, Nagi; Mehrabipour, Mehrnaz; Vassella, Erik; Bernhard, Sarah Maike; Döring, Yvonne; Holm, Annegret Elisabeth; Karow, Axel; Seebauer, Caroline Theresa; Silva, Natascha Platz Batista da; Wohlgemuth, Walter A.; Oppenheimer, Aviv; Kröning, Pia; Niemeyer, Charlotte; Schanze, Denny; Zenker, Martin; Eng, Whitney; Ahmadian, Mohammad Reza; Baumgartner, Iris; Rößler, Jochen
Somatic RIT1 delins in arteriovenous malformations hyperactivate RAS-MAPK signaling amenable to MEK inhibition
Angiogenesis - Dordrecht [u.a.]: Springer Science + Business Media B.V, Bd. 27 (2024), Heft 4, S. 739-752
[Imp.fact.: 9.2]

Kenney-Jung, Daniel L.; Collazo-Lopez, Josue E.; Rogers, Dante J.; Shanley, Ryan; Zatkalik, Abigail L.; Whitmarsh, Ashley E.; Roberts, Amy E.; Zenker, Martin; Pierpont, Elizabeth, I.
Epilepsy in cardiofaciocutaneous syndrome - clinical burden and response to anti-seizure medication
American journal of medical genetics - New York, NY : Wiley-Liss, Bd. 194 (2024), Heft 2, S. 301-310
[Imp.fact.: 1.7]

Lehr, Konrad; Lange, Undine Gabriele; Hipler, Noam Mathias; Vílchez-Vargas, Ramiro; Hoffmeister, Albrecht; Feisthammel, Jürgen; Buchloh, Dorina Christin; Schanze, Denny; Zenker, Martin; Gockel, Ines; Link, Alexander; Jansen-Winkeln, Boris
Prediction of anastomotic insufficiency based on the mucosal microbiome prior to colorectal surgery - a proof-of-principle study
Scientific reports - [London]: Springer Nature, Bd. 14 (2024), Artikel 15335, insges. 10 S.
[Imp.fact.: 3.8]

Mastromoro, Gioia; Santoro, Claudia; Motta, Marialetizia; Sorrentino, Ugo; Daniele, Paola; Peduto, Cristina; Petrizzelli, Francesco; Tripodi, Martina; Pinna, Valentina; Zanobio, Mariateresa; Rotundo, Giovannina; Bellacchio, Emanuele; Lepri, Francesca; Farina, Antonella; D'Asdia, Maria Cecilia; Piceci-Sparascio, Francesca; Biagini, Tommaso; Petracca, Antonio; Castori, Marco; Melis, Daniela; Accadia, Maria; Traficante, Giovanna; Tarani, Luigi; Fontana, Paolo; Sirchia, Fabio; Paparella, Roberto; Currò, Aurora; Benedicenti, Francesco; Scala, Iris; Dentici, Maria Lisa; Leoni, Chiara; Trevisan, Valentina; Cecconi, Antonella; Giustini, Sandra; Pizzuti, Antonio; Salviati, Leonardo; Novelli, Antonio; Zampino, Giuseppe; Zenker, Martin; Genuardi, Maurizio; Digilio, Maria Cristina; Papi, Laura; Perrotta, Silverio; Nigro, Vincenzo; Castellanos, Elisabeth; Mazza, Tommaso; Trevisson, Eva; Tartaglia, Marco; Piluso, Giulio; Luca, Alessandro De
Heterozygosity for loss-of-function variants in LZTR1 is associated with isolated multiple café-au-lait macules
Genetics in medicine - Amsterdam : Elsevier, Bd. 26 (2024), Heft 11, Artikel 101241, insges. 14 S.
[Imp.fact.: 6.6]

Mengoni, Miriam; Braun, Andreas; Seedarala, Sahithi; Bonifatius, Susanne; Kostenis, Eva; Schanze, Denny; Zenker, Martin; Tüting, Thomas; Gaffal, Evelyn
Transactivation of Met signaling by oncogenic Gnaq drives the evolution of melanoma in Hgf-Cdk4 mice
Cancer gene therapy - New York, NY : Nature Publ. Group, Bd. 31 (2024), Heft 6, S. 884-893
[Imp.fact.: 4.8]

Pierpont, Elizabeth I.; Bennett, Anton M.; Schoyer, Lisa; Stronach, Beth; Anschutz, April; Borrie, Sarah C.; Briggs, Benjamin; Burkitt-Wright, Emma; Castel, Pau; Cirstea, Ion Cristian; Draaisma, Fieke; Ellis, Michelle; Fear, Vanessa S.; Frone, Megan N.; Flex, Elisabetta; Gelb, Bruce D.; Green, Tamar; Gripp, Karen W.; Khoshkhoo, Sattar; Kieran, Mark W.; Kleemann, Karolin; Klein-Tasman, Bonita P.; Kontaridis, Maria I.; Kruszka, Paul; Leoni, Chiara; Liu, Clifford Z.; Merchant, Nadia; Magoulas, Pilar L.; Moertel, Christopher; Prada, Carlos E.; Rauen, Katherine A.; Roelofs, Renée; Rossignol, Rodrigue; Sevilla, Christine; Sevilla, Gigi; Sheedy, Ryan; Stieglitz, Elliot; Sun, Daochun; Tiemens, Dagmar; White, Forest; Wingbermühle, Ellen; Wolf, Cordula Maria; Zenker, Martin; Andelfinger, Gregor
The 8th International RASopathies symposium - expanding research and care practice through global collaboration and advocacy

American journal of medical genetics - New York, NY : Wiley-Liss, Bd. 194 (2024), Heft 4, Artikel e63477, insges. 11 S.
[Imp.fact.: 1.7]

Ramamoorthy, Senthilkumar; Lebrecht, Dirk; Schanze, Denny; Schanze, Ina; Wieland, Ilse; Andrieux, Geoffroy; Metzger, Patrick; Hess, Maria; Albert, Michael; Borkhardt, Arndt; Bresters, Dorine; Buechner, Jochen; Catala, Albert; Haas, Valerie De; Dworzak, Michael; Erlacher, Miriam; Hasle, Henrik; Jahnukainen, Kirsi; Locatelli, Franco; Masetti, Riccardo; Stary, Jan; Turkiewicz, Dominik; Vinci, Luca; Wlodarski, Marcin W.; Yoshimi-Nöllke, Ayami; Börries, Melanie; Niemeyer, Charlotte; Zenker, Martin; Flotho, Christian
Biallelic inactivation of the NF1 tumour suppressor gene in juvenile myelomonocytic leukaemia - genetic evidence of driver function and implications for diagnostic workup
British journal of haematology - Oxford [u.a.]: Wiley-Blackwell, Bd. 204 (2024), Heft 2, S. 595-605
[Imp.fact.: 5.1]

Revencu, Nicole; Eijkelenboom, Astrid; Bracquemart, Claire; Alhopuro, Pia; Armstrong, Judith; Baselga, Eulalia; Cesario, Claudia; Dentici, Maria Lisa; Eyries, Melanie; Frisk, Sofia; Karstensen, Helena Gásdal; Gene-Olaciregui, Nagore; Kivirikko, Sirpa; Lavarino, Cinzia; Mero, Inger-Lise; Michiels, Rodolphe; Pisaneschi, Elisa; Schönewolf-Greulich, Bitten; Wieland, Ilse; Zenker, Martin; Vikkula, Miikka
Assessment of gene-disease associations and recommendations for genetic testing for somatic variants in vascular anomalies by VASCERN-VASCA
Orphanet journal of rare diseases - London : BioMed Central, Bd. 19 (2024), Artikel 213, insges. 14 S.
[Imp.fact.: 3.4]

Sappok, Tanja; Kowalski, Christoph; Zenker, Martin; Weißinger, Florian; Berger, Andreas
Krebserkrankungen bei Menschen mit einer Intelligenzminderung in Deutschland - Prävalenzen, Genetik und Versorgungslage - Cancer in people with an intellectual disability in Germany - prevalence, genetics, and care situation
Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz - Berlin : Springer, Bd. 67 (2024), Heft 3, S. 362-369
[Imp.fact.: 1.7]

Schalk, Enrico; Pelz, Antje-Friederike
Auer rods in mature granulocytes in peripheral blood
International journal of hematology - Tokyo [u.a.]: Springer, Bd. 119 (2024), Heft 2, S. 105-106
[Imp.fact.: 1.7]

Schmidt, Vanessa Franziska; Kapp, Friedrich; Goldann, Constantin Immanuel; Huthmann, Linda; Cucuruz, Beatrix Rita; Brill, Richard; Vielsmeier, Veronika; Seebauer, Caroline Theresa; Michel, Armin-Johannes; Seidensticker, Max; Uller, Wibke; Weiß, Jakob Benjamin Wilhelm; Sint, Alena; Häberle, Beate; Haehl, Julia; Wagner, Alexandra; Cordes, Johanna; Holm, Annegret Elisabeth; Schanze, Denny; Ricke, Jens; Kimm, Melanie Alexandra; Wohlgemuth, Walter A.; Zenker, Martin; Wildgruber, Moritz
Extracranial vascular anomalies ariven by RAS/MAPK variants - spectrum and genotype–phenotype correlations
Journal of the American Heart Association - New York, NY : Association, Bd. 13 (2024), Heft 8, S. 1-14, Artikel e033287, insges. 14 S.
[Imp.fact.: 5.0]

Vanbelleghem, Eva; Van Damme, Tim; Beyens, Aude; Symoens, Sofie; Claes, Kathleen; De Backer, Julie; Meerschaut, Ilse; Vanommeslaeghe, Floris; Delanghe, Sigurd E.; Ende, Jenneke van den; Beyltjens, Tessi; Scimone, Eleanor R.; Lindsay, Mark E.; Schimmenti, Lisa A.; Hinze, Alicia M.; Dunn, Emily; Gomez-Ospina, Natalia; Vandernoot, Isabelle; Delguste, Thomas; Coppens, Sandra; Cormier-Daire, Valérie; Tartaglia, Marco; Garavelli, Livia; Shieh, Joseph; Demir, Şenol; Ateș, Esra Arslan; Zenker, Martin; Rohanizadegan, Mersedeh; Rivera-Cruz, Greysha; Douzgou, Sofia; Lin, Angela E.; Callewaert, Bert
Myhre syndrome in adulthood - clinical variability and emerging genotype-phenotype correlations
European journal of human genetics - Basingstoke : Stockton Press, Bd. 32 (2024), Heft 9, S. 1086-1094
[Imp.fact.: 3.7]

Volleth, Marianne; Khan, Faisal A. A.; Sotero-Caio, Cibele G.; Garner, Heath J.; Baker, Robert J.; Müller, Stefan; Heller, Klaus-Gerhard
Karyotype description of Hesperoptenus tomesi and relationships within the genus Hesperoptenus (Chiroptera: Vespertilionidae) as revealed by cytogenetic and mtDNA data
Acta chiropterologica - Warszawa : Acad., Bd. 26 (2024), Heft 1, insges. 14 S.
[Imp.fact.: 0.7]

Weiss, Eva-Maria; Guhathakurta, Debarpan; Petrušková, Aneta; Hundrup, Verena; Zenker, Martin; Fejtová, Anna
Developmental effect of RASopathy mutations on neuronal network activity on a chip
Frontiers in cellular neuroscience - Lausanne : Frontiers Research Foundation, Bd. 18 (2024), Artikel 1388409, insges. 19 S.
[Imp.fact.: 4.2]

Windrich, Jonas; Braubach, Peter Paul Johann; Länger, Florian; Dingemann, Jens; Schwerk, Nicolaus; Wetzke, Martin; Renz, Diane Miriam Esther; Zenker, Martin; Schanze, Denny; Kratz, Christian Peter
RAS-MAPK pathway mutations in congenital pulmonary airway malformations
American journal of respiratory and critical care medicine - New York, NY : American Thoracic Society, Bd. 209 (2024), Heft 10, S. 1266-1268
[Imp.fact.: 19.3]

Windrich, Jonas; Ney, Gina M.; Rosenberg, Philip S.; Kim, Jung; Zenker, Martin; Stewart, Douglas R.; Kratz, Christian Peter
Cancer in multilineage mosaic RASopathies due to pathogenic variants in HRAS or KRAS - a systematic review and meta-analysis
Clinical cancer research - Philadelphia, Pa. [u.a.]: AACR, Bd. 30 (2024), Heft 22, S. 5116-5121
[Imp.fact.: 10.4]

ABSTRACTS

Ullmann, Sarah R.; Schreier, Julian; Franke, Sabine; Körber-Ferl, Kerstin; Schanze, Denny; Lohmann, Christoph H.; Röpke, Martin; Ullmann, David; Georgiades, Marilena; Ullmann, Joana; Jechorek, Dörthe; Roessner, Albert; Karras, Franziska Sabrina
microRNA profiling in combination with whole exome sequencing reveals insights into long-term recurrence patterns in chordoma
Next Generation Pathology - Berlin . - 2024, S. 91, Artikel AG07.03