Stanford



Ellen Kuhl

Catherine Holman Johnson Director of Stanford Bio-X, Walter B Reinhold Professor in the School of Engineering, Professor of Mechanical Engineering and, by courtesy, of Bioengineering

NIH Biosketch available Online Curriculum Vitae available Online

Bio

BIO

Ellen is the Catherine Holman Johnson Director of Stanford Bio-X and the Walter B. Reinhold Professor in the School of Engineering. She is a Professor of Mechanical Engineering and, by courtesy, Bioengineering. Her area of expertise is Living Matter Physics, the design of theoretical and computational models to simulate and predict the behavior of living systems. Ellen has published more than 200 peer-reviewed journal articles and edited two books; she is an active reviewer for more than 30 journals at the interface of engineering and medicine and an editorial board member of seven international journals in her field. Ellen is a founding member of the Living Heart Project, a translational research initiative to revolutionize cardiovascular science through realistic simulation with 400 participants from research, industry, and medicine from 24 countries. Ellen was the Robert Bosch Chair of Mechanical Engineering from 2019-2024. She is the current Chair of the US National Committee on Biomechanics and a Member-Elect of the World Council of Biomechanics. She is a Fellow of the American Society of Mechanical Engineers and of the American Institute for Mechanical and Biological Engineering. She received the National Science Foundation Career Award in 2010, was selected as Midwest Mechanics Seminar Speaker in 2014, and received the Humboldt Research Award in 2016, the ASME Ted Belytschko Applied Mechanics Award in 2021, and the ERC Advanced Grant in 2024. Ellen is a three-time All American triathlete, a multiple Berlin, Boston, Chicago, and New York marathon runner, and a three-time Kona Ironman World Championship participant.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Professor (By courtesy), Bioengineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Human Performance Alliance
- Member, Institute for Computational and Mathematical Engineering (ICME)
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Director, Stanford Bio-X, (2024- present)
- Chair, Stanford Mechanical Engineering, (2019-2024)
- Chair, US National Committee on Biomechanics, (2018- present)
- Member, Stanford Bio-X Leadership Council, (2022- present)
- Member, Wu Tsai Human Performance Alliance Executive Committee, (2021- present)

- Member-Elect, World Council of Biomechanics, (2018- present)
- Chair, Stanford Mechanical Engineering Graduate Admission Committee, (2018-2019)
- Member, Stanford Mechanical Engineering Faculty Search Committee, (2018-2019)
- Chair, Stanford Mechanical Engineering Graduate Curriculum Committee, (2017-2018)
- Member, Stanford Long-Range Planning Steering Group Research, (2017-2018)
- Member, Stanford Neurosciences Institute Faculty Search Committee, (2017-2018)
- Member-at-Large, US Association for Computational Mechanics, (2016-2020)
- Vice Chair, US National Committee on Biomechanics, (2016-2018)
- Member, NIH IMAG Interagency Modeling Analysis Group Steering Committee, (2016-2018)
- Member, Stanford Mechanical Engineering Appointment & Promotion Committee, (2016-2018)
- Member, Stanford Leading the Biomedical Revolution, (2016-2017)
- Chair, US Association for Computational Mechanics Biological Systems, (2015-2019)
- Fellow, Stanford University, (2015-2017)
- Chair, Stanford Mechanical Engineering Faculty Search Committee, (2015-2016)
- Member, Stanford Mechanical Engineering, Advisory Committee AdCom, (2014-2024)
- Member, NIH Modeling and Analysis of Biological Systems MABS Study Section, (2014-2018)
- Secretary, US National Committee on Biomechanics, (2014-2016)
- Member, Stanford Faculty Voice & Influence Program, (2013-2014)
- Chair, Stanford Mechanical Engineering Graduate Admission Committee, (2012-2014)
- Member, Stanford Bioengineering Faculty Search Committee, (2010-2011)
- Member, Stanford Mechanical Engineering Faculty Search Committee, (2009-2010)
- Member, Stanford Mechanical Engineering Graduate Admission Committee, (2008-2012)
- Member, Stanford Mechanical Engineering Faculty Search Committee, (2008-2009)
- Member, Stanford Mechanical Engineering ABET Committee, (2008-2009)

HONORS AND AWARDS

- ERC Advanced Grant, European Research Council (2024)
- ASME Ted Belytschko Applied Mechanics Award, American Society of Mechanical Engineers (2021)
- ASME Fellow, American Society of Mechanical Engineers (2017)
- Humboldt Research Award, Alexander von Humboldt Stiftung (2016)
- AIMBE Fellow, American Institute for Medical and Biological Engineering (2014)
- NSF CAREER Award, National Science Foundation (2010-2014)
- Hellman Faculty Scholar, Hellman Faculty Scholar (2009)
- Habilitation Research Fellowship, German National Science Foundation (DFG) (2001-2004)
- Graduate Research Fellowship, German National Science Foundation (DFG) (1996-1999)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Editorial Advisory Board, Computer Methods in Applied Mechanics and Engineering (2022 - present)
- Editorial Advisory Board, Computational Mechanics (2022 - present)
- Editorial Board Member, Brain Multiphysics (2019 - present)

- Associate Editor, Annals of Biomedical Engineering (2015 - present)
- Associate Editor, Journal of the Mechanics and Physics of Solids (2015 - present)
- Editorial Board Member, Biomechanics and Modeling in Mechanobiology (2015 - present)
- Editorial Adviser, Journal of the Mechanics and Physics of Solids (2013 - 2015)
- Editorial Board Member, Journal of Computational Surgery (2012 - present)
- Associate Editor, ASME Applied Mechanics Reviews (2012 - 2016)
- Editorial Board Member, Acta Mechanica Sinica (2011 - present)
- Editorial Board Member, Comp Methods Biomechanics and Biomed Engineering (2011 - present)
- Editorial Board Member, Int J Numerical Methods in Biomedical Engineering (2011 - present)

PROFESSIONAL EDUCATION

- habil., TU Kaiserslautern (2004)
- Ph.D., University of Stuttgart (2000)
- M.S., Leibniz University of Hanover (1995)
- B.S., Leibniz University of Hanover (1993)

LINKS

- Lab Website: https://livingmatter.stanford.edu/
- Google Scholar: https://scholar.google.com/citations?user=jjQDKYYAAAAJ&hl=en

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Ellen is the Catherine Holman Johnson Director of Stanford Bio-X and the Walter B. Reinhold Professor in the School of Engineering. She is a professor of mechanical engineering and, by courtesy, bioengineering. Ellen's lab integrates physics-based modeling with machine learning and create interactive simulation tools to understand, explore, and predict the dynamics of living systems. Her area of expertise is living matter physics, the design of theoretical and computational models to simulate and predict the behavior of living systems. She has pioneered constitutive neural networks for automated model discovery of soft matter systems including the brain, the heart, arteries, skin, and, most recently, plant-based and animal meat.

Teaching

COURSES

2026-27

- Automated Model Discovery: ME 233 (Win)

2025-26

- Automated Model Discovery: ME 233 (Win)

2024-25

- Automated Model Discovery: ME 233 (Win)

2023-24

- Automated Model Discovery: ME 233 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Ethan Darwin, Sehui Jeong, Janelle Kaneda, Lazaros Papamanolis, Kristen Steudel, Jessica Towns

Postdoctoral Faculty Sponsor

Aeneas Koosis, Vahidullah Tac

Doctoral Dissertation Advisor (AC)

Reese Dunne, Jeremy McCulloch

Doctoral Dissertation Co-Advisor (AC)

Divya Rajasekharan, Devin Seyler

Publications

PUBLICATIONS

- **Artificial intelligence for food innovation.** *Nature food*
  Datta, B., Buehler, M. J., Chow, Y., Gligorić, K., Jurafsky, D., Kaplan, D. L., Ledesma-Amaro, R., Del Missier, G., Neidhardt, L., Pichara, K., Sanchez-Lengeling, B., Schlangen, M., St Pierre, et al
  2026
- **Generative artificial intelligence creates delicious, sustainable, and nutritious burgers.** *NPJ science of food*
  Tac, V., Gardner, C. D., Kuhl, E.
  2026; 10 (1)
- **AI for food: accelerating and democratizing discovery and innovation.** *NPJ science of food*
  Kuhl, E.
  2025; 9 (1): 82
- **Democratizing biomedical simulation through automated model discovery and a universal material subroutine** *COMPUTATIONAL MECHANICS*
  Peirlinck, M., Linka, K., Hurtado, J. A., Holzapfel, G. A., Kuhl, E.
  2024
- **On automated model discovery and a universal material subroutine for hyperelastic materials** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Peirlinck, M., Linka, K., Hurtado, J. A., Kuhl, E.
  2024; 418
- **Bayesian Physics-Based Modeling of Tau Propagation in Alzheimer's Disease.** *Frontiers in physiology*
  Schafer, A., Peirlinck, M., Linka, K., Kuhl, E., Alzheimer's Disease Neuroimaging Initiative (ADNI)
  2021; 12: 702975
- **Artificial Intelligence and the Generative Science of Food Formulation.** *Annual review of food science and technology*
  Tac, V., Kuhl, E.
  2026
- **Infinite-Dimensional Closed-Loop Inverse Kinematics for Soft Robots via Neural Operators** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Veil, C., Flaschel, M., Kuhl, E., Della Santina, C.
  2026; 11 (11): 13319-13326
- **Unsupervised material fingerprinting: Ultra-fast hyperelastic model discovery from full-field experimental measurements** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Flaschel, M., Moreno-Mateos, M., Wiesheier, S., Steinmann, P., Kuhl, E.
  2026; 461
- **Non-smooth optimization meets automated material model discovery** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Flaschel, M., Hastie, T., Kuhl, E.
  2026; 563

- **Autoencoder-based non-intrusive model order reduction for anisotropic and multi-physics problems** *COMPUTATIONAL MECHANICS*
  Kehls, J., Kuhl, E., Brepols, T., Linka, K., Holthusen, H.
  2026
- **Age-dependent brain mechanics are linked to microstructural changes.** *Acta biomaterialia*
  Hoppstädter, M., Linka, K., Schmicke, M., Kuhl, E., Böl, M.
  2026
- **The meatball matchup: Plant vs. animal proteins on campus.** *Food research international (Ottawa, Ont.)*
  St Pierre, S. R., Koosis, A. O., Zhang, N., Kuhl, E.
  2026; 240: 119631
- **The meatball matchup: Plant vs. animal proteins on campus** *FOOD RESEARCH INTERNATIONAL*
  St Pierre, S. R., Koosis, A. O., Zhang, N., Kuhl, E.
  2026; 240
- **Neural operators solve inverse problems for constitutive model discovery** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Flaschel, M., Liu, B., Kuhl, E.
  2027; 463
- **Generalized invariants meet constitutive neural networks: A novel framework for hyperelastic materials** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Martonova, D., Goriely, A., Kuhl, E.
  2026; 206
- **Learning ultra-compressible hyperelasticity with splines: Constitutive asymmetries and non-unique representations** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Moreno-Mateos, M., Wiesheier, S., Steinmann, P., Kuhl, E.
  2027; 218
- **Discovering the mechanics of ultra-low density elastomeric foams in elite-level racing shoes.** *Engineering with computers*
  McCulloch, J. A., Delp, S. L., Kuhl, E.
  2026; 42 (5): 175
- **Emergent symmetry in mushroom-based foods** *EXTREME MECHANICS LETTERS*
  Pierre, S., Vervenne, T., Darwin, E. C., Kuhl, E.
  2026; 87
- **Fiber dispersion in the right ventricle: A comparison of constitutive neural network predictions with experimental data.** *Journal of biomechanics*
  Ingalkar, P. S., Kakaletsis, S., Rausch, M. K., Kuhl, E., Martonová, D.
  2026; 206: 113532
- **Biophysical modeling of anatomically realistic prenatal cortical folding development.** *Nature communications*
  Hou, J., Wu, Z., Jiang, K., Wu, T., Zhang, L., Zhu, D., Gao, W., Razavi, M. J., Liu, T., Kuhl, E., Li, G., Wang, X.
  2026
- **Constitutive discovery in the living human heart.** *bioRxiv : the preprint server for biology*
  Martonová, D., Kolawole, F. O., Shinde, S. A., Ennis, D. B., Kuhl, E.
  2026
- **A whole-brain model of amyloid beta accumulation and cerebral hypoperfusion in Alzheimer's disease#** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Corti, M., Ahern, A., Goriely, A., Kuhl, E., Antonietti, P. F.
  2026; 461
- **The mechanics and physics of tofu: Understanding hydrated soft solids through feature networks** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Boes, B., Simon, J., Holthusen, H., Kuhl, E.

2026; 213

- **Generative AI for material design: A mechanics perspective from burgers to matter** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Tac, V., Kuhl, E.
  2026; 461
- **Adaptive Material Fingerprinting for the fast discovery of polyconvex feature combinations in isotropic and anisotropic hyperelasticity** *INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE*
  Flaschel, M., Holthusen, H., Martonova, D., Kuhl, E.
  2026; 227
- **Open-Source Benchmarking of Plant-Based and Animal Meats.** *Foods (Basel, Switzerland)*
  van den Bedem, S. D., Kuhl, E., Cotto, C.
  2026; 15 (12)
- **Texture Independently Drives Liking in AI-Generated Alternative Protein Burgers.** *Foods (Basel, Switzerland)*
  Tac, V., Koosis, A. O., Kuhl, E.
  2026; 15 (11)
- **A convex route to thermoelasticity: Learning internal energy and dissipation** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Holthusen, H., Steinmann, P., Kuhl, E.
  2026; 459
- **Shape-Space Graphs: Fast and Collision-Free Path Planning for Soft Robots** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Veil, C., Flaschel, M., Kuhl, E.
  2026; 11 (5): 5582-5589
- **A note on constitutive artificial neural networks for finite strain plasticity#** *MECHANICS RESEARCH COMMUNICATIONS*
  van der Velden, T., Boes, B., Brepols, T., Kuhl, E., Holthusen, H.
  2026; 155
- **Mechanical, rheological, and sensory characterization of lion's mane mushroom steak.** *Current research in food science*
  St Pierre, S. R., Boyle, L., Vervenne, T., Darwin, E. C., Goodson, M. A., Palomares, M., Zhang, N., Kuhl, E.
  2026; 12: 101403
- **A complement to neural networks for anisotropic inelasticity at finite strains** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Holthusen, H., Kuhl, E.
  2026; 450
- **Material Fingerprinting: A shortcut to material model discovery without solving optimization problems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Flaschel, M., Martonova, D., Veil, C., Kuhl, E.
  2026; 450
- **Reanimating the past: From historical collections of the placenta and uterus to modern imaging, machine learning, and multiscale modeling.** *Placenta*
  Rolf, M., Jayatissa, S., Reshef, J., Posch, S., Kuhl, E., James, J. L., Clark, A. R., Allerkamp, H. H.
  2026
- **State-of-the-art and tomorrow's challenges and opportunities in constitutive modeling of soft biological tissues with a focus on arterial, cardiac and brain biomechanics.** *Acta biomaterialia*
  Avril, S., Goriely, A., Holzapfel, G. A., Kuhl, E., Nordsletten, D., Ogden, R. W.
  2026
- **Biophysical modeling of anatomically realistic prenatal cortical folding development.** *Research square*
  Wang, X., Hou, J., Wu, Z., Jiang, K., Wu, T., Zhang, L., Zhu, D., Gao, W., Razavi, M., Liu, T., Kuhl, E., Li, G.
  2026

- **A generalized dual potential for inelastic Constitutive Artificial Neural Networks: A JAX implementation at finite strains** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Holthusen, H., Linka, K., Kuhl, E., Brepols, T.
  2026; 206
- **Material Fingerprinting for rapid discovery of hyperelastic models: First experimental validation** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Martonova, D., Kuhl, E., Flaschel, M.
  2026; 208
- **Stretching the Limits: From Planar-Biaxial Stress-Stretch to Arterial Pressure-Diameter.** *Journal of biomechanical engineering*
  Vervenne, T., Vermeeren, N., Demeersseman, N., Fehervary, H., Peirlinck, M., Kuhl, E., Famaey, N.
  2025: 1-33
- **A universal material model subroutine for soft matter systems.** *Engineering with computers*
  Peirlinck, M., Hurtado, J. A., Rausch, M. K., Tepole, A. B., Kuhl, E.
  2025; 41 (2): 905-927
- **Discovering dispersion: How robust is automated model discovery for human myocardial tissue?** *Biomechanics and modeling in mechanobiology*
  Martonová, D., Leyendecker, S., Holzapfel, G. A., Kuhl, E.
  2025
- **Democratizing biomedical simulation through automated model discovery and a universal material subroutine.** *Computational mechanics*
  Peirlinck, M., Linka, K., Hurtado, J. A., Holzapfel, G. A., Kuhl, E.
  2025; 75 (6): 1703-1723
- **Mechanical Characterization of Brain Tissue: Experimental Techniques, Human Testing Considerations, and Perspectives.** *Acta biomaterialia*
  Hou, J., Jiang, K., Ramanathan, A., Kumar, A. S., Zhang, W., Zhao, L., Wu, T., Pidaparti, R., Zhu, D., Li, G., Song, K., Liu, T., Razavi, et al
  2025
- **Discovering uncertainty: Gaussian constitutive neural networks with correlated weights** *COMPUTATIONAL MECHANICS*
  McCulloch, J. A., Kuhl, E.
  2025; 76 (6): 1527-1539
- **Probing mycelium mechanics and taste: The moist and fibrous signature of fungi steak.** *Acta biomaterialia*
  Vervenne, T., St Pierre, S. R., Famaey, N., Kuhl, E.
  2025
- **Ultra-fast physics-based modeling of the elephant trunk** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Kaczmarski, B., Moulton, D. E., Goriely, Z., Goriely, A., Kuhl, E.
  2025; 200
- **Convex neural networks learn generalized standard material models** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Flaschel, M., Steinmann, P., De Lorenzis, L., Kuhl, E.
  2025; 200
- **Medical digital twins: enabling precision medicine and medical artificial intelligence.** *The Lancet. Digital health*
  Sadée, C., Testa, S., Barba, T., Hartmann, K., Schuessler, M., Thieme, A., Church, G. M., Okoye, I., Hernandez-Boussard, T., Hood, L., Shmulevich, I., Kuhl, E., Gevaert, et al
  2025: 100864
- **Mechanical Characterization of Brain Tissue: Experimental Techniques, Human Testing Considerations, and Perspectives.** *ArXiv*
  Hou, J., Jiang, K., Ramanathan, A., Kumar, A. S., Zhang, W., Zhao, L., Wu, T., Pidaparti, R., Zhu, D., Li, G., Song, K., Liu, T., Razavi, et al
  2025
- **Texture profile analysis and rheology of plant-based and animal meat.** *Food research international (Ottawa, Ont.)*
  Dunne, R. A., Darwin, E. C., Perez Medina, V. A., Levenston, M. E., St Pierre, S. R., Kuhl, E.
  2025; 205: 115876

- **Constitutive neural networks for main pulmonary arteries: discovering the undiscovered.** *Biomechanics and modeling in mechanobiology*
  Vervenne, T., Peirlinck, M., Famaey, N., Kuhl, E.
  2025

- **Characterizing variability in passive myocardial stiffness in healthy human left ventricles using personalized MRI and finite element modeling.** *Scientific reports*
  Kolawole, F. O., Wang, V. Y., Freytag, B., Loecher, M., Cork, T. E., Nash, M. P., Kuhl, E., Ennis, D. B.
  2025; 15 (1): 5556

- **Automated model discovery for tensional homeostasis: Constitutive machine learning in growth and remodeling.** *Computers in biology and medicine*
  Holthusen, H., Brepols, T., Linka, K., Kuhl, E.
  2025; 186: 109691

- **Discovering uncertainty: Bayesian constitutive artificial neural networks** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Linka, K., Holzapfel, G. A., Kuhl, E.
  2025; 433

- **Atrial Constitutive Neural Networks**
  Peirlinck, M., Linka, K., Kuhl, E.
  edited by Chabiniok, R., Zou, Q., Hussain, T., Nguyen, H. H., Zaha, V. G., Gusseva, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2025: 249-259

- **Biaxial testing and sensory texture evaluation of plant-based and animal deli meat.** *Current research in food science*
  St Pierre, S. R., Sibley, L. S., Tran, S., Tran, V., Darwin, E. C., Kuhl, E.
  2025; 10: 101080

- **The mechanical and sensory signature of plant-based and animal meat.** *NPJ science of food*
  St Pierre, S. R., Darwin, E. C., Adil, D., Aviles, M. C., Date, A., Dunne, R. A., Lall, Y., Parra Vallecillo, M., Perez Medina, V. A., Linka, K., Levenston, M. E., Kuhl, E.
  2024; 8 (1): 94

- **Mimicking Mechanics: A Comparison of Meat and Meat Analogs.** *Foods (Basel, Switzerland)*
  St Pierre, S. R., Kuhl, E.
  2024; 13 (21)

- **Machine learning reveals correlations between brain age and mechanics.** *Acta biomaterialia*
  Hoppstädter, M., Linka, K., Kuhl, E., Schmicke, M., Böl, M.
  2024

- **Personalizing the shoulder rhythm in a computational upper body model improves kinematic tracking in high range-of-motion arm movements.** *Journal of biomechanics*
  Maier, J. N., Bianco, N. A., Ong, C. F., Muccini, J., Kuhl, E., Delp, S. L.
  2024; 176: 112365

- **Automated model discovery for textile structures: The unique mechanical signature of warp knitted fabrics.** *Acta biomaterialia*
  McCulloch, J. A., Kuhl, E.
  2024

- **A universal material model subroutine for soft matter systems** *ENGINEERING WITH COMPUTERS*
  Peirlinck, M., Hurtado, J. A., Rausch, M. K., Tepole, A., Kuhl, E.
  2024

- **Automated Data-Driven Discovery of Material Models Based on Symbolic Regression: A Case Study on the Human Brain Cortex.** *Acta biomaterialia*
  Hou, J., Chen, X., Wu, T., Kuhl, E., Wang, X.
  2024

- **Data-driven continuum damage mechanics with built-in physics** *EXTREME MECHANICS LETTERS*
  Tac, V., Kuhl, E., Tepole, A.

2024; 71

- **Data-driven continuum damage mechanics with built-in physics.** *Extreme Mechanics Letters*
  Tac, V., Kuhl, E., Tepole, A. B.
  2024; 71
- **Theory and implementation of inelastic Constitutive Artificial Neural Networks** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Holthusen, H., Lamm, L., Brepols, T., Reese, S., Kuhl, E.
  2024; 428
- **Automated model discovery for human cardiac tissue: Discovering the best model and parameters** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Martonova, D., Peirlinck, M., Linka, K., Holzapfel, G. A., Leyendecker, S., Kuhl, E.
  2024; 428
- **Best-in-class modeling: A novel strategy to discover constitutive models for soft matter systems** *EXTREME MECHANICS LETTERS*
  Linka, K., Kuhl, E.
  2024; 70
- **Minimal activation with maximal reach: Reachability clouds of bio-inspired slender** *EXTREME MECHANICS LETTERS*
  Kaczmarski, B., Moulton, D. E., Goriely, A., Kuhl, E.
  2024; 71
- **I too I 2: A new class of hyperelastic isotropic incompressible models based solely on the second invariant** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Kuhl, E., Goriely, A.
  2024; 188
- **Panel stacking is a threat to consensus statement validity.** *Journal of clinical epidemiology*
  Kepp, K. P., Aavitsland, P., Ballin, M., Balloux, F., Baral, S., Bardosh, K., Bauchner, H., Bendavid, E., Bhopal, R., Blumstein, D. T., Boffetta, P., Bourgeois, F., Brufsky, et al
  2024: 111428
- **Minimal Design of the Elephant Trunk as an Active Filament.** *Physical review letters*
  Kaczmarski, B., Leanza, S., Zhao, R., Kuhl, E., Moulton, D. E., Goriely, A.
  2024; 132 (24): 248402
- **Sex-specific cardiovascular risk factors in the UK Biobank.** *Frontiers in physiology*
  St Pierre, S. R., Kaczmarski, B., Peirlinck, M., Kuhl, E.
  2024; 15: 1339866
- **On sparse regression, L_p-regularization, and automated model discovery** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  McCulloch, J. A., St Pierre, S. R., Linka, K., Kuhl, E.
  2024
- **Elephant Trunk Inspired Multimodal Deformations and Movements of Soft Robotic Arms** *ADVANCED FUNCTIONAL MATERIALS*
  Leanza, S., Lu-Yang, J., Kaczmarski, B., Wu, S., Kuhl, E., Zhao, R.
  2024
- **Benchmarking physics-informed frameworks for data-driven hyperelasticity.** *Computational mechanics*
  Taç, V., Linka, K., Sahli-Costabal, F., Kuhl, E., Tepole, A. B.
  2024; 73 (1): 49-65
- **Data-driven hyperelasticity, Part II: A canonical framework for anisotropic soft biological tissues** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Tikenogullari, O., Acan, A., Kuhl, E., Dal, H.
  2023; 181
- **Discovering a reaction-diffusion model for Alzheimer's disease by combining PINNs with symbolic regression** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*

Zhang, Z., Zou, Z., Kuhl, E., Karniadakis, G.
2024; 419

- **Discovering the mechanics of artificial and real meat** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  St Pierre, S. R., Rajasekharan, D., Darwin, E. C., Linka, K., Levenston, M. E., Kuhl, E.
  2023; 415
- **Automated model discovery for muscle using constitutive recurrent neural networks.** *Journal of the mechanical behavior of biomedical materials*
  Wang, L. M., Linka, K., Kuhl, E.
  2023; 145: 106021
- **Effects of cardiac growth on electrical dyssynchrony in the single ventricle patient.** *Computer methods in biomechanics and biomedical engineering*
  Tikenoğulları, O. Z., Peirlinck, M., Chubb, H., Dubin, A. M., Kuhl, E., Marsden, A. L.
  2023: 1-17
- **Benchmarking physics-informed frameworks for data-driven hyperelasticity** *COMPUTATIONAL MECHANICS*
  Tac, V., Linka, K., Sahli-Costabal, F., Kuhl, E., Tepole, A.
  2023
- **Automated model discovery for skin: Discovering the best model, data, and experiment** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Linka, K., Tepole, A., Holzapfel, G. A., Kuhl, E.
  2023; 410
- **Validating MRI-Derived Myocardial Stiffness Estimates Using In Vitro Synthetic Heart Models.** *Annals of biomedical engineering*
  Kolawole, F. O., Peirlinck, M., Cork, T. E., Levenston, M., Kuhl, E., Ennis, D. B.
  2023
- **Bayesian design optimization of biomimetic soft actuators** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Kaczmarski, B., Moulton, D. E., Goriely, A., Kuhl, E.
  2023; 408
- **A Simulation Tool for Physics-Informed Control of Biomimetic Soft Robotic Arms** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Kaczmarski, B., Goriely, A., Kuhl, E., Moulton, D. E.
  2023; 8 (2): 936-943
- **Automated model discovery for human brain using Constitutive Artificial Neural Networks.** *Acta biomaterialia*
  Linka, K., Pierre, S. R., Kuhl, E.
  2023
- **A new family of Constitutive Artificial Neural Networks towards automated model discovery** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Linka, K., Kuhl, E.
  2023; 403
- **Image-based axon model highlights heterogeneity in initiation of damage.** *Biophysical journal*
  Wang, L. M., Goodman, M. B., Kuhl, E.
  2022
- **Bayesian Physics Informed Neural Networks for real-world nonlinear dynamical systems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Linka, K., Schafer, A., Meng, X., Zou, Z., Karniadakis, G., Kuhl, E.
  2022; 402
- **How viscous is the beating heart?: Insights from a computational study.** *Computational mechanics*
  Tikenoğulları, O. Z., Costabal, F. S., Yao, J., Marsden, A., Kuhl, E.
  2022; 70 (3): 565-579
- **Correlating the microstructural architecture and macrostructural behaviour of the brain.** *Acta biomaterialia*

Hoppstädter, M., Püllmann, D., Seydewitz, R., Kuhl, E., Böl, M.
2022

- **Rheology of growing axons** *PHYSICAL REVIEW RESEARCH*
  Oliveri, H., de Rooij, R., Kuhl, E., Goriely, A.
  2022; 4 (3)
- **Active filaments I: Curvature and torsion generation** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Kaczmarski, B., Moulton, D. E., Kuhl, E., Goriely, A.
  2022; 164
- **Correlating tau pathology to brain atrophy using a physics-based Bayesian model** *ENGINEERING WITH COMPUTERS*
  Schafer, A., Chaggar, P., Goriely, A., Kuhl, E.
  2022
- **How viscous is the beating heart? Insights from a computational study** *COMPUTATIONAL MECHANICS*
  Tikenogullari, O., Costabal, F., Yao, J., Marsden, A., Kuhl, E.
  2022
- **Mechanics of axon growth and damage: A systematic review of computational models.** *Seminars in cell & developmental biology*
  Wang, L. M., Kuhl, E.
  2022
- **How drugs modulate the performance of the human heart** *COMPUTATIONAL MECHANICS*
  Peirlinck, M., Yao, J., Sahli Costabal, F., Kuhl, E.
  2022
- **Sex Matters: A Comprehensive Comparison of Female and Male Hearts.** *Frontiers in physiology*
  St Pierre, S. R., Peirlinck, M., Kuhl, E.
  2022; 13: 831179
- **Growth and remodeling in the pulmonary autograft: computational evaluation using kinematic growth models and constrained mixture theory.** *International journal for numerical methods in biomedical engineering*
  Vastmans, J., Maes, L., Peirlinck, M., Vanderveken, E., Rega, F., Kuhl, E., Famaey, N.
  2021: e3549
- **Effects of B.1.1.7 and B.1.351 on COVID-19 Dynamics: A Campus Reopening Study.** *Archives of computational methods in engineering : state of the art reviews*
  Linka, K., Peirlinck, M., Schäfer, A., Tikenogullari, O. Z., Goriely, A., Kuhl, E.
  2021: 1-12
- **Effects of B.1.1.7 and B.1.351 on COVID-19 Dynamics: A Campus Reopening Study** *ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING*
  Linka, K., Peirlinck, M., Schaefer, A., Tikenogullari, O., Goriely, A., Kuhl, E.
  2021
- **COVID-19 dynamics across the US: A deep learning study of human mobility and social behavior** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Bhouri, M., Costabal, F., Wang, H., Linka, K., Peirlinck, M., Kuhl, E., Perdikaris, P.
  2021; 382
- **Multiscale modeling meets machine learning: What can we learn?** *Archives of computational methods in engineering : state of the art reviews*
  Peng, G. C., Alber, M., Tepole, A. B., Cannon, W. R., De, S., Dura-Bernal, S., Garikipati, K., Karniadakis, G., Lytton, W. W., Perdikaris, P., Petzold, L., Kuhl, E.
  2021; 28 (3): 1017-1037
- **Are college campuses superspreaders? A data-driven modeling study.** *Computer methods in biomechanics and biomedical engineering*
  Lu, H., Weintz, C., Pace, J., Indana, D., Linka, K., Kuhl, E.
  2021: 1–11
- **Global and local mobility as a barometer for COVID-19 dynamics.** *Biomechanics and modeling in mechanobiology*

Linka, K. n., Goriely, A. n., Kuhl, E. n.
2021

- **Sex Differences in Drug-Induced Arrhythmogenesis.** *Frontiers in physiology*
  Peirlinck, M., Sahli Costabal, F., Kuhl, E.
  2021; 12: 708435
- **Visualizing the invisible: The effect of asymptomatic transmission on the outbreak dynamics of COVID-19.** *Computer methods in applied mechanics and engineering*
  Peirlinck, M., Linka, K., Sahli Costabal, F., Bhattacharya, J., Bendavid, E., Ioannidis, J. P., Kuhl, E.
  2020; 372: 113410
- **Folding drives cortical thickness variations** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
  Holland, M. A., Budday, S., Li, G., Shen, D., Goriely, A., Kuhl, E.
  2020; 229 (17-18): 2757–78
- **Folding drives cortical thickness variations.** *The European physical journal. Special topics*
  Holland, M. A., Budday, S., Li, G., Shen, D., Goriely, A., Kuhl, E.
  2020; 229 (17-18): 2757-2778
- **Protein-protein interactions in neurodegenerative diseases: A conspiracy theory.** *PLoS computational biology*
  Thompson, T. B., Chaggar, P., Kuhl, E., Goriely, A., Alzheimers Disease Neuroimaging Initiative
  2020; 16 (10): e1008267
- **Neuronal Oscillations on Evolving Networks: Dynamics, Damage, Degradation, Decline, Dementia, and Death.** *Physical review letters*
  Goriely, A., Kuhl, E., Bick, C.
  2020; 125 (12): 128102
- **Fifty Shades of Brain: A Review on the Mechanical Testing and Modeling of Brain Tissue** *ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING*
  Budday, S., Ovaert, T. C., Holzapfel, G. A., Steinmann, P., Kuhl, E.
  2020; 27 (4): 1187–1230
- **Editorial overview: Biomechanics and mechanobiology of tissue growth and remodeling: Current opinions** *CURRENT OPINION IN BIOMEDICAL ENGINEERING*
  Kuhl, E., Humphrey, J. D.
  2020; 15: A1-A2
- **Is it safe to lift COVID-19 travel bans? The Newfoundland story** *COMPUTATIONAL MECHANICS*
  Linka, K., Rahman, P., Goriely, A., Kuhl, E.
  2020
- **The reproduction number of COVID-19 and its correlation with public health interventions.** *Computational mechanics*
  Linka, K., Peirlinck, M., Kuhl, E.
  2020: 1-16
- **Special Issue on Uncertainty Quantification, Machine Learning, and Data-Driven Modeling of Biological Systems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Tepole, A., Nordsletten, D., Garikipati, K., Kuhl, E.
  2020; 362
- **Towards microstructure-informed material models for human brain tissue** *ACTA BIOMATERIALIA*
  Budday, S., Sarem, M., Starck, L., Sommer, G., Pfefferle, J., Phunchago, N., Kuhl, E., Paulsen, F., Steinmann, P., Shastri, V. P., Holzapfel, G. A.
  2020; 104: 53–65
- **Physics-Informed Neural Networks for Cardiac Activation Mapping** *FRONTIERS IN PHYSICS*
  Costabal, F., Yang, Y., Perdikaris, P., Hurtado, D. E., Kuhl, E.
  2020; 8
- **Multiscale Modeling Meets Machine Learning: What Can We Learn?** *ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING*

Peng, G. C. Y., Alber, M., Tepole, A., Cannon, W., De, S., Dura-Bernal, S., Garikipati, K., Karniadakis, G., Lytton, W. W., Perdikaris, P., Petzold, L., Kuhl, E.
2020

- **Classifying Drugs by their Arrhythmogenic Risk Using Machine Learning.** *Biophysical journal*
  Sahli-Costabal, F., Seo, K., Ashley, E., Kuhl, E.
  2020
- **Nervous Tissue Stiffens Postinjury.** *Biophysical journal*
  Kuhl, E.
  2020; 118 (2): 276–78
- **Outbreak dynamics of COVID-19 in Europe and the effect of travel restrictions** *Comp Meth Biomech Biomed Eng*
  Linka, K., Peirlinck, M., Sahli Costabal, F., Kuhl, E.
  2020; 23: 710-717
- **Modeling the life cycle of the human brain** *Current Opinion in Biomedical Engineering*
  Budday, S., Kuhl, E.
  2020; 15: 16-25
- **Outbreak dynamics of COVID-19 in China and the United States.** *Biomechanics and modeling in mechanobiology*
  Peirlinck, M. n., Linka, K. n., Sahli Costabal, F. n., Kuhl, E. n.
  2020
- **Network Diffusion Modeling Explains Longitudinal Tau PET Data.** *Frontiers in neuroscience*
  Schafer, A., Mormino, E. C., Kuhl, E.
  2020; 14: 566876
- **Modeling and simulation of infectious diseases.** *Computational mechanics*
  Zohdi, T. I., Kuhl, E. n.
  2020: 1
- **Data-driven modeling of COVID-19-Lessons learned.** *Extreme Mechanics Letters*
  Kuhl, E. n.
  2020: 100921
- **Multi-fidelity classification using Gaussian processes: Accelerating the prediction of large-scale computational models** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Costabal, F., Perdikaris, P., Kuhl, E., Hurtado, D. E.
  2019; 357
- **Viscoelasticity of the axon limits stretch-mediated growth** *COMPUTATIONAL MECHANICS*
  Wang, L. M., Kuhl, E.
  2019
- **Do annuloplasty rings designed to treat ischemic/functional mitral regurgitation alter left-ventricular dimensions in the acutely ischemic ovine heart?** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
  Bothe, W., Kvitting, J., Rausch, M. K., Timek, T. A., Swanson, J. C., Liang, D. H., Walther, M., Kuhl, E., Ingels, N. B., Miller, D.
  2019; 158 (4): 1058–68
- **On the implementation of finite deformation gradient-enhanced damage models** *COMPUTATIONAL MECHANICS*
  Ostwald, R., Kuhl, E., Menzel, A.
  2019; 64 (3): 847–77
- **The Shrinking Brain: Cerebral Atrophy Following Traumatic Brain Injury** *ANNALS OF BIOMEDICAL ENGINEERING*
  Harris, T. C., de Rooij, R., Kuhl, E.
  2019; 47 (9): 1941–59
- **Growth and remodelling of living tissues: perspectives, challenges and opportunities.** *Journal of the Royal Society, Interface*
  Ambrosi, D., Ben Amar, M., Cyron, C. J., DeSimone, A., Goriely, A., Humphrey, J. D., Kuhl, E.
  2019; 16 (157): 20190233

- **Predicting critical drug concentrations and torsadogenic risk using a multiscale exposure-response simulator** *PROGRESS IN BIOPHYSICS & MOLECULAR BIOLOGY*
  Costabal, F., Yao, J., Sher, A., Kuhl, E.
  2019; 144: 61–76

- **Revisiting the wrinkling of elastic bilayers I: linear analysis** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
  Alawiye, H., Kuhl, E., Goriely, A.
  2019; 377 (2144)

- **Revisiting the wrinkling of elastic bilayersl: linear analysis.** *Philosophical transactions. Series A, Mathematical, physical, and engineering sciences*
  Alawiye, H., Kuhl, E., Goriely, A.
  2019; 377 (2144): 20180076

- **Machine learning in drug development: Characterizing the effect of 30 drugs on the QT interval using Gaussian process regression, sensitivity analysis, and uncertainty quantification** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Costabal, F., Matsuno, K., Yao, J., Perdikaris, P., Kuhl, E.
  2019; 348: 313–33

- **Machine learning in drug development: Characterizing the effect of 30 drugs on the QT interval using Gaussian process regression, sensitivity analysis, and uncertainty quantification.** *Computer methods in applied mechanics and engineering*
  Costabal, F. S., Matsuno, K., Yao, J., Perdikaris, P., Kuhl, E.
  2019; 348: 313-333

- **A physics-based model explains the prion-like features of neurodegeneration in Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Weickenmeier, J., Jucker, M., Goriely, A., Kuhl, E.
  2019; 124: 264–81

- **Understanding the mechanical link between oriented cell division and cerebellar morphogenesis.** *Soft matter*
  Lejeune, E., Dortdivanlioglu, B., Kuhl, E., Linder, C.
  2019

- **Do annuloplasty rings designed to treat ischemic/functional mitral regurgitation alter left-ventricular dimensions in the acutely ischemic ovine heart?** *The Journal of thoracic and cardiovascular surgery*
  Bothe, W., Escobar Kvitting, J., Rausch, M. K., Timek, T. A., Swanson, J. C., Liang, D. H., Walther, M., Kuhl, E., Ingels, N. B., Miller, D. C.
  2019

- **Integrating machine learning and multiscale modeling-perspectives, challenges, and opportunities in the biological, biomedical, and behavioral sciences.** *NPJ digital medicine*
  Alber, M. n., Buganza Tepole, A. n., Cannon, W. R., De, S. n., Dura-Bernal, S. n., Garikipati, K. n., Karniadakis, G. n., Lytton, W. W., Perdikaris, P. n., Petzold, L. n., Kuhl, E. n.
  2019; 2: 115

- **Spatially-extended nucleation-aggregation-fragmentation models for the dynamics of prion-like neurodegenerative protein-spreading in the brain and its connectome.** *Journal of theoretical biology*
  Fornari, S. n., Schäfer, A. n., Kuhl, E. n., Goriely, A. n.
  2019: 110102

- **Prion-like spreading of Alzheimer's disease within the brain's connectome.** *Journal of the Royal Society, Interface*
  Fornari, S. n., Schäfer, A. n., Jucker, M. n., Goriely, A. n., Kuhl, E. n.
  2019; 16 (159): 20190356

- **Connectomics of neurodegeneration.** *Nature neuroscience*
  Kuhl, E. n.
  2019; 22 (8): 1200–1202

- **Symmetry Breaking in Wrinkling Patterns: Gyri Are Universally Thicker than Sulci.** *Physical review letters*
  Holland, M., Budday, S., Goriely, A., Kuhl, E.
  2018; 121 (22): 228002

- **Symmetry Breaking in Wrinkling Patterns: Gyri Are Universally Thicker than Sulci** *PHYSICAL REVIEW LETTERS*
  Holland, M., Budday, S., Goriely, A., Kuhl, E.
  2018; 121 (22)
- **Modeling the Axon as an Active Partner with the Growth Cone in Axonal Elongation** *BIOPHYSICAL JOURNAL*
  de Rooij, R., Kuhl, E., Miller, K. E.
  2018; 115 (9): 1783–95
- **Predicting critical drug concentrations and torsadogenic risk using a multiscale exposure-response simulator.** *Progress in biophysics and molecular biology*
  Sahli Costabal, F., Yao, J., Sher, A., Kuhl, E.
  2018
- **The Shrinking Brain: Cerebral Atrophy Following Traumatic Brain Injury.** *Annals of biomedical engineering*
  Harris, T. C., de Rooij, R., Kuhl, E.
  2018
- **Multiphysics of Prionlike Diseases: Progression and Atrophy.** *Physical review letters*
  Weickenmeier, J., Kuhl, E., Goriely, A.
  2018; 121 (15): 158101
- **Modeling the Axon as an Active Partner with the Growth Cone in Axonal Elongation.** *Biophysical journal*
  de Rooij, R., Kuhl, E., Miller, K. E.
  2018
- **Mechanical Cues in Spinal Cord Injury.** *Biophysical journal*
  Kuhl, E.
  2018
- **Physical Biology of Axonal Damage** *FRONTIERS IN CELLULAR NEUROSCIENCE*
  de Rooij, R., Kuhl, E.
  2018; 12: 144
- **Improving tissue expansion protocols through computational modeling** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Lee, T., Vaca, E. E., Ledwon, J. K., Bae, H., Topczewska, J. M., Turin, S. Y., Kuhl, E., Gosain, A. K., Tepole, A.
  2018; 82: 224–34
- **Predicting drug-induced arrhythmias by multiscale modeling** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
  Costabal, F., Yao, J., Kuhl, E.
  2018; 34 (5): e2964
- **A physical multifield model predicts the development of volume and structure in the human brain** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  de Rooij, R., Kuhl, E.
  2018; 112: 563–76
- **Interpreting Activation Mapping of Atrial Fibrillation: A Hybrid Computational/Physiological Study** *ANNALS OF BIOMEDICAL ENGINEERING*
  Costabal, F., Zaman, J. A. B., Kuhl, E., Narayan, S. M.
  2018; 46 (2): 257–69
- **Growth and remodeling play opposing roles during postnatal human heart valve development** *SCIENTIFIC REPORTS*
  Oomen, P. J. A., Holland, M. A., Bouten, C. V. C., Kuhl, E., Loerakker, S.
  2018; 8: 1235
- **Microtubule Polymerization and Cross-Link Dynamics Explain Axonal Stiffness and Damage** *BIOPHYSICAL JOURNAL*
  de Rooij, R., Kuhl, E.
  2018; 114 (1): 201–12

- **Magnetic resonance elastography of the brain: A comparison between pigs and humans** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Weickenmeier, J., Kurt, M., Ozkaya, E., Wintermark, M., Pauly, K., Kuhl, E.
  2018; 77: 702–10
- **Predicting the cardiac toxicity of drugs using a novel multiscale exposure-response simulator** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Costabal, F., Yao, J., Kuhl, E.
  2018; 21 (3): 232–46
- **Determining the Differential Effects of Stretch and Growth in Tissue-Expanded Skin: Combining Isogeometric Analysis and Continuum Mechanics in a Porcine Model** *DERMATOLOGIC SURGERY*
  Purnell, C. A., Gart, M. S., Buganza-Tepole, A., Tomaszewski, J. P., Topczewska, J. M., Kuhl, E., Gosain, A. K.
  2018; 44 (1): 48–52
- **Pilot Findings of Brain Displacements and Deformations during Roller Coaster Rides** *JOURNAL OF NEUROTRAUMA*
  Kuo, C., Wu, L. C., Ye, P. P., Laksari, K., Camarillo, D. B., Kuhl, E.
  2017; 34 (22): 3198–3205
- **Dimensional, Geometrical, and Physical Constraints in Skull Growth.** *Physical review letters*
  Weickenmeier, J., Fischer, C., Carter, D., Kuhl, E., Goriely, A.
  2017; 118 (24): 248101
- **The importance of mechano-electrical feedback and inertia in cardiac electromechanics** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Costabal, F., Concha, F. A., Hurtado, D. E., Kuhl, E.
  2017; 320: 352–68
- **Wrinkling instabilities in soft bilayered systems** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
  Budday, S., Andres, S., Walter, B., Steinmann, P., Kuhl, E.
  2017; 375 (2093)
- **The mechanical importance of myelination in the central nervous system.** *Journal of the mechanical behavior of biomedical materials*
  Weickenmeier, J., de Rooij, R., Budday, S., Ovaert, T. C., Kuhl, E.
  2017
- **Quantification of Strain in a Porcine Model of Skin Expansion Using Multi-View Stereo and Isogeometric Kinematics** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*
  Tepole, A. B., Vaca, E. E., Purnell, C. A., Gart, M., McGrath, J., Kuhl, E., Gosain, A. K.
  2017
- **Modeling molecular mechanisms in the axon** *COMPUTATIONAL MECHANICS*
  de Rooij, R., Miller, K. E., Kuhl, E.
  2017; 59 (3): 523-537
- **The mechanics of decompressive craniectomy: Personalized simulations** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Weickenmeier, J., Butler, C. A., Young, P. G., Goriely, A., Kuhl, E.
  2017; 314: 180-195
- **The Pursuit of Engineering the Ideal Heart Valve Replacement or Repair: A Special Issue of the Annals of Biomedical Engineering.** *Annals of biomedical engineering*
  Dasi, L. P., Grande-Allen, J., Kunzelman, K., Kuhl, E.
  2017; 45 (2): 307-309
- **A virtual sizing tool for mitral valve annuloplasty.** *International journal for numerical methods in biomedical engineering*
  Rausch, M. K., Zöllner, A. M., Genet, M., Baillargeon, B., Bothe, W., Kuhl, E.
  2017; 33 (2)
- **Mechanical characterization of human brain tissue** *ACTA BIOMATERIALIA*

Budday, S., Sommer, G., Birkl, C., Langkammer, C., Haybaeck, J., Kohnert, J., Bauer, M., Paulsen, F., Steinmann, P., Kuhl, E., Holzapfel, G. A.
2017; 48: 319-340

- **Instabilities of soft films on compliant substrates** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Holland, M. A., Li, B., Feng, X. Q., Kuhl, E.
  2017; 98: 350-365
- **Passive Stretch Induces Structural and Functional Maturation of Engineered Heart Muscle as Predicted by Computational Modeling.** *Stem cells (Dayton, Ohio)*
  Abilez, O. J., Tzatzalos, E. n., Yang, H. n., Zhao, M. T., Jung, G. n., Zöllner, A. M., Tiburcy, M. n., Riegler, J. n., Matsa, E. n., Shukla, P. n., Zhuge, Y. n., Chour, T. n., Chen, et al
  2017
- **The mechanics of decompressive craniectomy: Bulging in idealized geometries** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Weickenmeier, J., Kuhl, E., Goriely, A.
  2016; 96: 572-590
- **Terminating atrial fibrillation by cooling the heart.** *Heart rhythm*
  Narayan, S. M., Baykaner, T., Sahli Costabal, F., Kuhl, E.
  2016; 13 (11): 2259-2260
- **Stress Singularities in Swelling Soft Solids** *PHYSICAL REVIEW LETTERS*
  Goriely, A., Weickenmeier, J., Kuhl, E.
  2016; 117 (13)
- **Brain stiffness increases with myelin content.** *Acta biomaterialia*
  Weickenmeier, J., de Rooij, R., Budday, S., Steinmann, P., Ovaert, T. C., Kuhl, E.
  2016; 42: 265-272
- **Elastosis during airway wall remodeling explains multiple co-existing instability patterns** *JOURNAL OF THEORETICAL BIOLOGY*
  Eskandari, M., Javili, A., Kuhl, E.
  2016; 403: 209-218
- **Generating Purkinje networks in the human heart.** *Journal of biomechanics*
  Sahli Costabal, F., Hurtado, D. E., Kuhl, E.
  2016; 49 (12): 2455-2465
- **Partial LVAD restores ventricular outputs and normalizes LV but not RV stress distributions in the acutely failing heart in silico** *INTERNATIONAL JOURNAL OF ARTIFICIAL ORGANS*
  Sack, K. L., Baillargeon, B., Acevedo-Bolton, G., Genet, M., Rebelo, N., Kuhl, E., Klein, L., Weiselthaler, G. M., Burkhoff, D., Franz, T., Guccione, J. M.
  2016; 39 (8): 421-430
- **Computational modeling of acute myocardial infarction** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Saez, P., Kuhl, E.
  2016; 19 (10): 1107-1115
- **Using 3D Printing to Create Personalized Brain Models for Neurosurgical Training and Preoperative Planning.** *World neurosurgery*
  Ploch, C. C., Mansi, C. S., Jayamohan, J., Kuhl, E.
  2016; 90: 668-674
- **The Incompatibility of Living Systems: Characterizing Growth-Induced Incompatibilities in Expanded Skin** *ANNALS OF BIOMEDICAL ENGINEERING*
  Tepole, A. B., Gart, M., Purnell, C. A., Gosain, A. K., Kuhl, E.
  2016; 44 (5): 1734-1752
- **Multiphysics and multiscale modelling, data - model fusion and integration of organ physiology in the clinic: ventricular cardiac mechanics** *INTERFACE FOCUS*
  Chabiniok, R., Wang, V. Y., Hadjicharalambous, M., Asner, L., Lee, J., Sermesant, M., Kuhl, E., Young, A. A., Moireau, P., Nash, M. P., Chapelle, D., Nordsletten, D. A.
  2016; 6 (2): 20150083

- **Response to Letters Regarding Article, "Segmental Aortic Stiffening Contributes to Experimental Abdominal Aortic Aneurysm Development"** *CIRCULATION*
  Raaz, U., Zoellner, A. M., Schellinger, I. N., Toh, R., Nakagami, F., Brandt, M., Emrich, F. C., Kayama, Y., Eken, S., Adam, M., Maegdefessel, L., Hertel, T., Deng, et al
  2016; 133 (1): E11–E12

- **Biophysics: Unfolding the brain** *Nature Physics*
  Kuhl, E.
  2016

- **Modeling Pathologies of Diastolic and Systolic Heart Failure** *ANNALS OF BIOMEDICAL ENGINEERING*
  Genet, M., Lee, L. C., BAILLARGEON, B., Guccione, J. M., Kuhl, E.
  2016; 44 (1): 112-127

- **Constitutive Modeling of Brain Tissue: Current Perspectives** *APPLIED MECHANICS REVIEWS*
  de Rooij, R., Kuhl, E.
  2016; 68 (1)

- **Computational modeling of chemo-bio-mechanical coupling: a systems-biology approach toward wound healing.** *Computer methods in biomechanics and biomedical engineering*
  Buganza Tepole, A., Kuhl, E.
  2016; 19 (1): 13-30

- **Tri-layer wrinkling as a mechanism for anchoring center initiation in the developing cerebellum** *SOFT MATTER*
  Lejeune, E., Javili, A., Weickenmeier, J., Kuhl, E., Linder, C.
  2016; 12 (25): 5613-5620

- **Tau-ism: The Yin and Yang of Microtubule Sliding, Detachment, and Rupture** *BIOPHYSICAL JOURNAL*
  van den Bedem, H., Kuhl, E.
  2015; 109 (11): 2215-2217

- **Systems biology and mechanics of growth** *WILEY INTERDISCIPLINARY REVIEWS-SYSTEMS BIOLOGY AND MEDICINE*
  Eskandari, M., Kuhl, E.
  2015; 7 (6): 401-412

- **Secondary instabilities modulate cortical complexity in the mammalian brain** *PHILOSOPHICAL MAGAZINE*
  Budday, S., Steinmann, P., Kuhl, E.
  2015; 95 (28-30): 3244-3256

- **Period-doubling and period-tripling in growing bilayered systems** *PHILOSOPHICAL MAGAZINE*
  Budday, S., Kuhl, E., Hutchinson, J. W.
  2015; 95 (28-30): 3208-3224

- **Multi-view stereo analysis reveals anisotropy of prestrain, deformation, and growth in living skin.** *Biomechanics and modeling in mechanobiology*
  Buganza Tepole, A., Gart, M., Purnell, C. A., Gosain, A. K., Kuhl, E.
  2015; 14 (5): 1007-1019

- **Mechanics of the brain: perspectives, challenges, and opportunities** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Goriely, A., Geers, M. G., Holzapfel, G. A., Jayamohan, J., Jerusalem, A., Sivaloganathan, S., Squier, W., Van Dommelen, J. A., Waters, S., Kuhl, E.
  2015; 14 (5): 931-965

- **Patient-Specific Airway Wall Remodeling in Chronic Lung Disease.** *Annals of biomedical engineering*
  Eskandari, M., Kuschner, W. G., Kuhl, E.
  2015; 43 (10): 2538-2551

- **Systems biology and mechanics of growth.** *Wiley interdisciplinary reviews. Systems biology and medicine*
  Eskandari, M., Kuhl, E.
  2015; 7 (6): 401-12

- **Computational aspects of growth-induced instabilities through eigenvalue analysis** *COMPUTATIONAL MECHANICS*
  Javili, A., Dortdivanlioglu, B., Kuhl, E., Linder, C.
  2015; 56 (3): 405-420
- **Isogeometric Kirchhoff-Love shell formulations for biological membranes** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Tepole, A. B., Kabaria, H., Bletzinger, K., Kuhl, E.
  2015; 293: 328-347
- **Isogeometric Kirchhoff-Love shell formulations for biological membranes.** *Computer methods in applied mechanics and engineering*
  Tepole, A. B., Kabaria, H., Bletzinger, K. U., Kuhl, E.
  2015; 293: 328-347
- **Heterogeneous growth-induced prestrain in the heart** *JOURNAL OF BIOMECHANICS*
  Genet, M., Rausch, M. K., Lee, L. C., Choy, S., Zhao, X., Kassab, G. S., Kozerke, S., Guccione, J. M., Kuhl, E.
  2015; 48 (10): 2080-2089
- **Physical biology of human brain development** *FRONTIERS IN CELLULAR NEUROSCIENCE*
  Budday, S., Steinmann, P., Kuhl, E.
  2015; 9
- **Emerging Brain Morphologies from Axonal Elongation** *ANNALS OF BIOMEDICAL ENGINEERING*
  Holland, M. A., Miller, K. E., Kuhl, E.
  2015; 43 (7): 1640-1653
- **A new sparse matrix vector multiplication graphics processing unit algorithm designed for finite element problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  Wong, J., Kuhl, E., Darve, E.
  2015; 102 (12): 1784-1814
- **Mechanical properties of gray and white matter brain tissue by indentation.** *Journal of the mechanical behavior of biomedical materials*
  Budday, S., Nay, R., de Rooij, R., Steinmann, P., Wyrobek, T., Ovaert, T. C., Kuhl, E.
  2015; 46: 318-330
- **Mechanical properties of gray and white matter brain tissue by indentation.** *Journal of the mechanical behavior of biomedical materials*
  Budday, S., Nay, R., de Rooij, R., Steinmann, P., Wyrobek, T., Ovaert, T. C., Kuhl, E.
  2015; 46: 318-330
- **Segmental Aortic Stiffening Contributes to Experimental Abdominal Aortic Aneurysm Development** *CIRCULATION*
  Raaz, U., Zoellner, A. M., Schellinger, I. N., Toh, R., Nakagami, F., Brandt, M., Emrich, F. C., Kayama, Y., Eken, S., Adam, M., Maegdefessel, L., Hertel, T., Deng, et al
  2015; 131 (20): 1783-1795
- **Morphoelastic control of gastro-intestinal organogenesis: Theoretical predictions and numerical insights** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Balbi, V., Kuhl, E., Ciarletta, P.
  2015; 78: 493-510
- **Use it or lose it: multiscale skeletal muscle adaptation to mechanical stimuli.** *Biomechanics and modeling in mechanobiology*
  Wisdom, K. M., Delp, S. L., Kuhl, E.
  2015; 14 (2): 195-215
- **A computational model that predicts reverse growth in response to mechanical unloading** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Lee, L. C., Genet, M., Acevedo-Bolton, G., Ordovas, K., Guccione, J. M., Kuhl, E.
  2015; 14 (2): 217-229
- **Secondary instabilities modulate cortical complexity in the mammalian brain.** *Philosophical magazine (Abingdon, England)*
  Budday, S., Steinmann, P., Kuhl, E.
  2015; 95 (28-30): 3244-3256

- **Period-doubling and period-tripling in growing bilayered systems.** *Philosophical magazine (Abingdon, England)*
  Budday, S., Kuhl, E., Hutchinson, J. W.
  2015; 95 (28-30): 3208-3224
- **On high heels and short muscles: a multiscale model for sarcomere loss in the gastrocnemius muscle.** *Journal of theoretical biology*
  Zöllner, A. M., Pok, J. M., McWalter, E. J., Gold, G. E., Kuhl, E.
  2015; 365: 301-310
- **The emergence of extracellular matrix mechanics and cell traction forces as important regulators of cellular self-organization** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Checa, S., Rausch, M. K., Petersen, A., Kuhl, E., Duda, G. N.
  2015; 14 (1): 1-13
- **Neuromechanics: From Neurons to Brain** *ADVANCES IN APPLIED MECHANICS, VOL 48*
  Goriely, A., Budday, S., Kuhl, E.
  2015; 48: 79-139
- **Human Cardiac Function Simulator for the Optimal Design of a Novel Annuloplasty Ring with a Sub-valvular Element for Correction of Ischemic Mitral Regurgitation.** *Cardiovascular engineering and technology*
  Baillargeon, B., Costa, I., Leach, J. R., Lee, L. C., Genet, M., Toutain, A., Wenk, J. F., Rausch, M. K., Rebelo, N., Acevedo-Bolton, G., Kuhl, E., Navia, J. L., Guccione, et al
  2015; 6 (2): 105-116
- **Pattern Selection in Growing Tubular Tissues** *PHYSICAL REVIEW LETTERS*
  Ciarletta, P., Balbi, V., Kuhl, E.
  2014; 113 (24)
- **The role of mechanics during brain development** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Budday, S., Steinmann, P., Kuhl, E.
  2014; 72: 75-92
- **The role of mechanics during brain development.** *Journal of the mechanics and physics of solids*
  Budday, S., Steinmann, P., Kuhl, E.
  2014; 72: 75-92
- **The Generalized Hill Model: A Kinematic Approach Towards Active Muscle Contraction.** *Journal of the mechanics and physics of solids*
  Göktepe, S., Menzel, A., Kuhl, E.
  2014; 72: 20-39
- **The generalized Hill model: A kinematic approach towards active muscle contraction** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Goktepe, S., Menzel, A., Kuhl, E.
  2014; 72: 20-39
- **Modeling and simulation of viscous electro-active polymers** *EUROPEAN JOURNAL OF MECHANICS A-SOLIDS*
  Vogel, F., Goktepe, S., Steinmann, P., Kuhl, E.
  2014; 48: 112-128
- **The Living Heart Project: A robust and integrative simulator for human heart function.** *European journal of mechanics. A, Solids*
  Baillargeon, B., Rebelo, N., Fox, D. D., Taylor, R. L., Kuhl, E.
  2014; 48: 38-47
- **Modeling and Simulation of Viscous Electro-Active Polymers.** *European journal of mechanics. A, Solids*
  Vogel, F., Göktepe, S., Steinmann, P., Kuhl, E.
  2014; 48: 112-128
- **The Living Heart Project: A robust and integrative simulator for human heart function** *EUROPEAN JOURNAL OF MECHANICS A-SOLIDS*
  Baillargeon, B., Rebelo, N., Fox, D. D., Taylor, R. L., Kuhl, E.
  2014; 48: 38-47

- **Characterization of living skin using multi-view stereo and isogeometric analysis.** *Acta biomaterialia*
  Buganza Tepole, A., Gart, M., Gosain, A. K., Kuhl, E.
  2014; 10 (11): 4822-4831
- **Application of finite element modeling to optimize flap design with tissue expansion.** *Plastic and reconstructive surgery*
  Buganza-Tepole, A., Steinberg, J. P., Kuhl, E., Gosain, A. K.
  2014; 134 (4): 785-792
- **Computational modeling of skin: Using stress profiles as predictor for tissue necrosis in reconstructive surgery** *COMPUTERS & STRUCTURES*
  Tepole, A. B., Gosain, A. K., Kuhl, E.
  2014; 143: 32-39
- **Computational modeling of skin: Using stress profiles as predictor for tissue necrosis in reconstructive surgery.** *Computers & structures*
  Tepole, A. B., Gosain, A. K., Kuhl, E.
  2014; 143: 32-39
- **Generating fibre orientation maps in human heart models using Poisson interpolation** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Wong, J., Kuhl, E.
  2014; 17 (11): 1217-1226
- **A mechanical model predicts morphological abnormalities in the developing human brain** *SCIENTIFIC REPORTS*
  Budday, S., Raybaud, C., Kuhl, E.
  2014; 4
- **Computational modelling of electrocardiograms: repolarisation and T-wave polarity in the human heart** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Hurtado, D. E., Kuhl, E.
  2014; 17 (9): 986-996
- **Computational modeling of hypertensive growth in the human carotid artery** *COMPUTATIONAL MECHANICS*
  Saez, P., Pena, E., Martinez, M. A., Kuhl, E.
  2014; 53 (6): 1183-1196
- **Computational modeling of hypertensive growth in the human carotid artery.** *Computational mechanics*
  Sáez, P., Peña, E., Martínez, M. A., Kuhl, E.
  2014; 53 (6): 1183-1196
- **On the mechanics of growing thin biological membranes.** *Journal of the mechanics and physics of solids*
  Rausch, M. K., Kuhl, E.
  2014; 63: 128-140
- **A novel strategy to identify the critical conditions for growth-induced instabilities** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Javili, A., Steinmann, P., Kuhl, E.
  2014; 29: 20-32
- **Growing matter: a review of growth in living systems.** *Journal of the mechanical behavior of biomedical materials*
  Kuhl, E.
  2014; 29: 529-43
- **Human pluripotent stem cell tools for cardiac optogenetics.** *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference*
  Zhuge, Y., Patlolla, B., Ramakrishnan, C., Beygui, R. E., Zarins, C. K., Deisseroth, K., Kuhl, E., Abilez, O. J.
  2014; 2014: 6171-6174
- **On the Role of Mechanics in Chronic Lung Disease.** *Materials (Basel, Switzerland)*
  Eskandari, M., Pfaller, M. R., Kuhl, E.
  2013; 6 (12): 5639-5658

- **Mathematical modeling of collagen turnover in biological tissue** *JOURNAL OF MATHEMATICAL BIOLOGY*
  Saez, P., Pena, E., Angel Martinez, M., Kuhl, E.
  2013; 67 (6-7): 1765-1793
- **On the Role of Mechanics in Chronic Lung Disease** *MATERIALS*
  Eskandari, M., Pfaller, M. R., Kuhl, E.
  2013; 6 (12): 5639-5658
- **Growth on demand: Reviewing the mechanobiology of stretched skin** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Zoellner, A. M., Holland, M. A., Honda, K. S., Gosain, A. K., Kuhl, E.
  2013; 28: 495-509
- **Computational modeling of chemo-electro-mechanical coupling: A novel implicit monolithic finite element approach** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
  Wong, J., Goektepe, S., Kuhl, E.
  2013; 29 (10): 1104-1133
- **Mechanics of the mitral valve: a critical review, an in vivo parameter identification, and the effect of prestrain.** *Biomechanics and modeling in mechanobiology*
  Rausch, M. K., Famaey, N., Shultz, T. O., Bothe, W., Miller, D. C., Kuhl, E.
  2013; 12 (5): 1053-1071
- **Mechanics of the mitral valve: a critical review, an in vivo parameter identification, and the effect of prestrain.** *Biomechanics and modeling in mechanobiology*
  Rausch, M. K., Famaey, N., Shultz, T. O., Bothe, W., Miller, D. C., Kuhl, E.
  2013; 12 (5): 1053-1071
- **On the effect of prestrain and residual stress in thin biological membranes** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Rausch, M. K., Kuhl, E.
  2013; 61 (9): 1955-1969
- **On the mechanics of thin films and growing surfaces** *MATHEMATICS AND MECHANICS OF SOLIDS*
  Holland, M. A., Kosmata, T., Goriely, A., Kuhl, E.
  2013; 18 (6): 561-575
- **On the mechanics of thin films and growing surfaces.** *Mathematics and mechanics of solids : MMS*
  Holland, M. A., Kosmata, T., Goriely, A., Kuhl, E.
  2013; 18 (6): 561-575
- **On the mechanics of continua with boundary energies and growing surfaces** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Papastavrou, A., Steinmann, P., Kuhl, E.
  2013; 61 (6): 1446-1463
- **Systems-based approaches toward wound healing** *PEDIATRIC RESEARCH*
  Tepole, A. B., Kuhl, E.
  2013; 73 (4): 553-563
- **Characterisation of electrophysiological conduction in cardiomyocyte co-cultures using co-occurrence analysis** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Chen, M. Q., Wong, J., Kuhl, E., Giovangrandi, L., Kovacs, G. T.
  2013; 16 (2): 185-197
- **A three-constituent damage model for arterial clamping in computer-assisted surgery** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Famaey, N., Vander Sloten, J., Kuhl, E.
  2013; 12 (1): 123-136
- **A fully implicit finite element method for bidomain models of cardiac electromechanics** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Dal, H., Goektepe, S., Kaliske, M., Kuhl, E.

2013; 253: 323-336

- **Evidence of adaptive mitral leaflet growth** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Rausch, M. K., Tibayan, F. A., Miller, D. C., Kuhl, E.
  2012; 15: 208-217
- **Stretching Skeletal Muscle: Chronic Muscle Lengthening through Sarcomerogenesis** *PLOS ONE*
  Zoellner, A. M., Abilez, O. J., Boel, M., Kuhl, E.
  2012; 7 (10)
- **Stretching skin: The physiological limit and beyond.** *International journal of non-linear mechanics*
  Tepole, A. B., Gosain, A. K., Kuhl, E.
  2012; 47 (8): 938-949
- **Stretching skin: The physiological limit and beyond** *INTERNATIONAL JOURNAL OF NON-LINEAR MECHANICS*
  Tepole, A. B., Gosain, A. K., Kuhl, E.
  2012; 47 (8): 938-949
- **How Do Annuloplasty Rings Affect Mitral Annular Strains in the Normal Beating Ovine Heart?** *Meeting of the American-Heart-Association*
  Bothe, W., Rausch, M. K., Kvitting, J. E., Echtner, D. K., Walther, M., Ingels, N. B., Kuhl, E., Miller, D. C.
  LIPPINCOTT WILLIAMS & WILKINS.2012: S231–S238
- **Growing skin: tissue expansion in pediatric forehead reconstruction.** *Biomechanics and modeling in mechanobiology*
  Zöllner, A. M., Buganza Tepole, A., Gosain, A. K., Kuhl, E.
  2012; 11 (6): 855-867
- **Anisotropic density growth of bone-A computational micro-sphere approach** *INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES*
  Waffenschmidt, T., Menzel, A., Kuhl, E.
  2012; 49 (14): 1928-1946
- **Growth and remodeling of the left ventricle: A case study of myocardial infarction and surgical ventricular restoration** *MECHANICS RESEARCH COMMUNICATIONS*
  Klepach, D., Lee, L. C., Wenk, J. F., Ratcliffe, M. B., Zohdi, T. I., Navia, J. L., Kassab, G. S., Kuhl, E., Guccione, J. M.
  2012; 42: 134-141
- **Computational Optogenetics: A Novel Continuum Framework for the Photoelectrochemistry of Living Systems.** *Journal of the mechanics and physics of solids*
  Wong, J., Abilez, O. J., Kuhl, E.
  2012; 60 (6): 1158-1178
- **Computational optogenetics: A novel continuum framework for the photoelectrochemistry of living systems** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Wong, J., Abilez, O. J., Kuhl, E.
  2012; 60 (6): 1158-1178
- **Frontiers in growth and remodeling** *MECHANICS RESEARCH COMMUNICATIONS*
  Menzel, A., Kuhl, E.
  2012; 42: 1-14
- **Kinematics of cardiac growth: In vivo characterization of growth tensors and strains** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Tsamis, A., Cheng, A., Nguyen, T. C., Langer, F., Miller, D. C., Kuhl, E.
  2012; 8: 165-177
- **On the biomechanics and mechanobiology of growing skin** *JOURNAL OF THEORETICAL BIOLOGY*
  Zoellner, A. M., Tepole, A. B., Kuhl, E.
  2012; 297: 166-175
- **Computational modeling of bone density profiles in response to gait: a subject-specific approach** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Pang, H., Shiwalkar, A. P., Madormo, C. M., Taylor, R. E., Andriacchi, T. P., Kuhl, E.

2012; 11 (3-4): 379-390

- **Mitral Valve Annuloplasty A Quantitative Clinical and Mechanical Comparison of Different Annuloplasty Devices** *ANNALS OF BIOMEDICAL ENGINEERING*
  Rausch, M. K., Bothe, W., Kvitting, J. E., Swanson, J. C., Miller, D. C., Kuhl, E.
  2012; 40 (3): 750-761
- **SPECIAL ISSUE ACTIVE TISSUE MODELING: FROM SINGLE MUSCLE CELLS TO MUSCULAR CONTRACTION** *INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING*
  Boel, M., Kuhl, E.
  2012; 10 (2): VII-VIII
- **COMPUTATIONAL MODELLING OF OPTOGENETICS IN CARDIAC CELLS** *ASME Summer Bioengineering Conference (SBC)*
  Wong, J., Abilez, O., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2012: 355–356
- **CHRONIC MITRAL VALVE LEAFLET GROWTH FOLLOWING MYOCARDIAL INFARCTION** *ASME Summer Bioengineering Conference (SBC)*
  Rausch, M. K., Tibayan, F. A., Miller, D. C., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2012: 1015–1016
- **FINITE ELEMENT MODELING OF FLAP DESIGN AFTER SKIN EXPANSION** *ASME Summer Bioengineering Conference (SBC)*
  Tepole, A. B., Zollner, A. M., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2012: 1017–1018
- **MODELING GROWTH IN TISSUE EXPANSION** *ASME Summer Bioengineering Conference (SBC)*
  Zoellner, A. M., Tepole, A. B., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2012: 213–214
- **Computational modeling of electrocardiograms: Repolarization and T-wave polarity in the human heart** *Comp Meth Biomech Biomed Eng, accepted for publication.*
  Hurtado D, Kuhl E
  2012
- **IN VITRO/IN SILICO CHARACTERIZATION OF ACTIVE AND PASSIVE STRESSES IN CARDIAC MUSCLE** *INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING*
  Boel, M., Abilez, O. J., Assar, A. N., Zarins, C. K., Kuhl, E.
  2012; 10 (2): 171-188
- **Consistent formulation of the growth process at the kinematic and constitutive level for soft tissues composed of multiple constituents** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Schmid, H., PAULI, L., Paulus, A., Kuhl, E., Itskov, M.
  2012; 15 (5): 547-561
- **A fully implicit finite element method for bidomain models of cardiac electrophysiology** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Dal, H., Goktepe, S., Kaliske, M., Kuhl, E.
  2012; 15 (6): 645-656
- **Computational modeling of growth: systemic and pulmonary hypertension in the heart** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Rausch, M. K., Dam, A., Goktepe, S., Abilez, O. J., Kuhl, E.
  2011; 10 (6): 799-811
- **Growing skin: A computational model for skin expansion in reconstructive surgery** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Tepole, A. B., Ploch, C. J., Wong, J., Gosain, A. K., Kuhl, E.
  2011; 59 (10): 2177-2190
- **Growing skin: A computational model for skin expansion in reconstructive surgery.** *Journal of the mechanics and physics of solids*
  Tepole, A. B., Ploch, C. J., Wong, J., Gosain, A. K., Kuhl, E.
  2011; 59 (10): 2177-2190

- **Active contraction of cardiac muscle: In vivo characterization of mechanical activation sequences in the beating heart** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Tsamis, A., Bothe, W., Kvitting, J. E., Swanson, J. C., Miller, D. C., Kuhl, E.
  2011; 4 (7): 1167-1176
- **Multiscale Computational Models for Optogenetic Control of Cardiac Function** *BIOPHYSICAL JOURNAL*
  Abilez, O. J., Wong, J., Prakash, R., Deisseroth, K., Zarins, C. K., Kuhl, E.
  2011; 101 (6): 1326-1334
- **Rigid, Complete Annuloplasty Rings Increase Anterior Mitral Leaflet Strains in the Normal Beating Ovine Heart** *Annual Meeting of the American-Heart-Association*
  Bothe, W., Kuhl, E., Kvitting, J. E., Rausch, M. K., Goektepe, S., Swanson, J. C., Farahmandnia, S., Ingels, N. B., Miller, D. C.
  LIPPINCOTT WILLIAMS & WILKINS.2011: S81–S96
- **A novel method for quantifying the in-vivo mechanical effect of material injected into a myocardial infarction.** *Annals of thoracic surgery*
  Wenk, J. F., Eslami, P., Zhang, Z., Xu, C., Kuhl, E., Gorman, J. H., Robb, J. D., Ratcliffe, M. B., Gorman, R. C., Guccione, J. M.
  2011; 92 (3): 935-941
- **Characterization of Mitral Valve Annular Dynamics in the Beating Heart** *ANNALS OF BIOMEDICAL ENGINEERING*
  Rausch, M. K., Bothe, W., Kvitting, J. E., Swanson, J. C., Ingels, N. B., Miller, D. C., Kuhl, E.
  2011; 39 (6): 1690-1702
- **In vivo dynamic strains of the ovine anterior mitral valve leaflet** *JOURNAL OF BIOMECHANICS*
  Rausch, M. K., Bothe, W., Kvitting, J. E., Goektepe, S., Miller, D. C., Kuhl, E.
  2011; 44 (6): 1149-1157
- **Perspectives on biological growth and remodeling** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Ambrosi, D., Ateshian, G. A., Arruda, E. M., Cowin, S. C., Dumais, J., Goriely, A., Holzapfel, G. A., Humphrey, J. D., Kemkemer, R., Kuhl, E., Olberding, J. E., Taber, L. A., Garikipati, et al
  2011; 59 (4): 863-883
- **Computational modeling of electrochemical coupling: A novel finite element approach towards ionic models for cardiac electrophysiology** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Wong, J., Goktepe, S., Kuhl, E.
  2011; 200 (45-46): 3139-3158
- **Computational modeling of passive myocardium** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
  Goektepe, S., Acharya, S. N., Wong, J., Kuhl, E.
  2011; 27 (1): 1-12
- **Anterior Mitral Leaflet Curvature During the Cardiac Cycle in the Normal Ovine Heart** *CIRCULATION*
  Kvitting, J. E., Bothe, W., Goektepe, S., Rausch, M. K., Swanson, J. C., Kuhl, E., Ingels, N. B., Miller, D. C.
  2010; 122 (17): 1683-1689
- **A generic approach towards finite growth with examples of athlete's heart, cardiac dilation, and cardiac wall thickening** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Goktepe, S., Abilez, O. J., Kuhl, E.
  2010; 58 (10): 1661-1680
- **A multiscale model for eccentric and concentric cardiac growth through sarcomerogenesis** *JOURNAL OF THEORETICAL BIOLOGY*
  Goktepe, S., Abilez, O. J., Parker, K. K., Kuhl, E.
  2010; 265 (3): 433-442
- **Natural element analysis of the Cahn-Hilliard phase-field model** *COMPUTATIONAL MECHANICS*
  Rajagopal, A., Fischer, P., Kuhl, E., Steinmann, P.
  2010; 46 (3): 471-493
- **Anterior mitral leaflet curvature in the beating ovine heart: a case study using videofluoroscopic markers and subdivision surfaces** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Goektepe, S., Bothe, W., Kvitting, J. E., Swanson, J. C., Ingels, N. B., Miller, D. C., Kuhl, E.

2010; 9 (3): 281-293

- **Computational modeling of electrocardiograms: A finite element approach toward cardiac excitation** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
  Kotikanyadanam, M., Goktepe, S., Kuhl, E.
  2010; 26 (5): 524-533
- **Stress concentrations in fractured compact bone simulated with a special class of anisotropic gradient elasticity** *INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES*
  Gitman, I. M., Askes, H., Kuhl, E., Aifantis, E. C.
  2010; 47 (9): 1099-1107
- **Atrial and ventricular fibrillation: computational simulation of spiral waves in cardiac tissue** *ARCHIVE OF APPLIED MECHANICS*
  Goktepe, S., Wong, J., Kuhl, E.
  2010; 80 (5): 569-580
- **Characterization of indentation response and stiffness reduction of bone using a continuum damage model** *JOURNAL OF THE MECHANICAL BEHAVIOR OF BIOMEDICAL MATERIALS*
  Zhang, J., Michalenko, M. M., Kuhl, E., Ovaert, T. C.
  2010; 3 (2): 189-202
- **Electromechanics of the heart: a unified approach to the strongly coupled excitation-contraction problem** *COMPUTATIONAL MECHANICS*
  Goektepe, S., Kuhl, E.
  2010; 45 (2-3): 227-243
- **Computational Homogenization of Confined Frictional Granular Matter** *IUTAM Symposium on Variational Concepts with Applications to the Mechanics of Materials*
  Meier, H. A., Steinmann, P., Kuhl, E.
  SPRINGER.2010: 157–169
- **Dilation and Hypertrophy: A Cell-Based Continuum Mechanics Approach Towards Ventricular Growth and Remodeling** *International-Union-of-Theoretical-and-Applied-Mechanics Symposium on Cellular, Molecular and Tissue Mechanics*
  Ulerich, J., Goektepe, S., Kuhl, E.
  SPRINGER.2010: 237–244
- **IN VITRO ASSESSMENT OF RAT HEART FORCE GENERATION: A QUANTITATIVE APPROACH FOR PREDICTING OUTCOMES FROM PLURIPOTENT STEM CELL-DERIVED THERAPY FOR MYOCARDIAL INFARCTION** *12th ASME Summer Bioengineering Conference*
  Guillou, L., Abilez, O. J., Baugh, J., Billakanti, G., Zarins, C. K., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2010: 717–718
- **Regional stiffening of the mitral valve anterior leaflet in the beating ovine heart** *JOURNAL OF BIOMECHANICS*
  Krishnamurthy, G., Itoh, A., Swanson, J. C., Bothe, W., Karlsson, M., Kuhl, E., Miller, D. C., Ingels, N. B.
  2009; 42 (16): 2697-2701
- **Towards the treatment of boundary conditions for global crack path tracking in three-dimensional brittle fracture** *COMPUTATIONAL MECHANICS*
  Jaeger, P., Steinmann, P., Kuhl, E.
  2009; 45 (1): 91-107
- **Mechanics in biology: cells and tissues PREFACE** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
  Ambrosi, D., Garikipati, K., Kuhl, E.
  2009; 367 (1902): 3335-3337
- **Stress-strain behavior of mitral valve leaflets in the beating ovine heart** *JOURNAL OF BIOMECHANICS*
  Krishnamurthy, G., Itoh, A., Bothe, W., Swanson, J. C., Kuhl, E., Karlsson, M., Miller, D. C., Ingels, N. B.
  2009; 42 (12): 1909-1916
- **Computational modeling of cardiac electrophysiology: A novel finite element approach** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  Goektepe, S., Kuhl, E.

2009; 79 (2): 156-178

- **Active stiffening of mitral valve leaflets in the beating heart** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*
  Itoh, A., Krishnamurthy, G., Swanson, J. C., Ennis, D. B., Bothe, W., Kuhl, E., Karlsson, M., Davis, L. R., Miller, D. C., Ingels, N. B.
  2009; 296 (6): H1766-H1773
- **Computational modeling of muscular thin films for cardiac repair** *COMPUTATIONAL MECHANICS*
  Boel, M., Reese, S., Parker, K. K., Kuhl, E.
  2009; 43 (4): 535-544
- **The phenomenon of twisted growth: humeral torsion in dominant arms of high performance tennis players** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
  Taylor, R. E., Zheng, C., Jackson, R. P., Doll, J. C., Chen, J. C., Holzbaur, K. R., Besier, T., Kuhl, E.
  2009; 12 (1): 83-93
- **EXPLORING CELLULAR TENSEGRITY: PHYSICAL MODELING AND COMPUTATIONAL SIMULATION** *ASME Summer Bioengineering Conference*
  Zheng, C. H., Doll, J., Gu, E., Hager-Barnard, E., Huang, Z., Kia, A., Ortiz, M., Petzold, B., Usul, T., Kwon, R., Jacobs, C., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2009: 283–284
- **FIRST ATTEMPTS TOWARDS THE COMPUTATIONAL SIMULATION OF NOVEL STEM-CELL BASED POST INFARCT THERAPIES** *ASME Summer Bioengineering Conference*
  Ulerich, J. P., Goktepe, S., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2009: 417–418
- **COMPUTATIONAL SIMULATION OF TRAVELING ARRHYTHMIC WAVES IN MYOCARDIAL TISSUE** *ASME Summer Bioengineering Conference*
  Wong, J., Goektepe, S., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2009: 829–830
- **HOW TO TREAT THE LOSS OF BEAT: MODELING AND SIMULATION OF VENTRICULAR GROWTH AND REMODELING AND NOVEL POST-INFARCTION THERAPIES** *ASME Summer Bioengineering Conference*
  Goktepe, S., Ulerich, J. P., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2009: 971–972
- **QUANTIFICATION OF IN VIVO STRESSES IN THE OVINE ANTERIOR MITRAL VALVE LEAFLET** *ASME Summer Bioengineering Conference*
  Krishnamurthy, G., Ltoh, A., Bothe, W., Ennis, D. B., Swanson, J. C., Kuhl, E., Miller, D. C., Ingels, N. B.
  AMER SOC MECHANICAL ENGINEERS.2009: 131–132
- **On the Multiscale Computation of Con"ned Granular Media** *ECCOMAS Multidisciplinary Jubilee Symposium on Computational Challenges in Materials, Structures and Fluids*
  Meier, H. A., Steinmann, P., Kuhl, E.
  SPRINGER-VERLAG BERLIN.2009: 121–133
- **CRITICAL LOADING DURING SERVE: MODELING STRESS-INDUCED BONE GROWTH IN PERFORMANCE TENNIS PLAYERS** *ASME Summer Bioengineering Conference*
  Taylor, R. E., Zheng, C., Jackson, R. P., Doll, J. C., Chen, J., Holzbaur, K. R., Besier, T., Kuhl, E.
  AMER SOC MECHANICAL ENGINEERS.2009: 201–202
- **Acceleration insensitive encapsulated silicon microresonator** *APPLIED PHYSICS LETTERS*
  Jha, C. M., Salvia, J., Chandorkar, S. A., Melamud, R., Kuhl, E., Kenny, T. W.
  2008; 93 (23)
- **Modeling three-dimensional crack propagation-A comparison of crack path tracking strategies** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  Jaeger, R., Steinmann, R., Kuhl, E.
  2008; 76 (9): 1328-1352
- **Visualization of particle interactions in granular media** *IEEE TRANSACTIONS ON VISUALIZATION AND COMPUTER GRAPHICS*
  Meier, H. A., Schlemmer, M., Wagner, C., Kerren, A., Hagen, H., Kuhl, E., Steinmann, P.
  2008; 14 (5): 1110-1125

- **Material properties of the ovine mitral valve anterior leaflet in vivo from inverse finite element analysis** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*
  Krishnamurthy, G., Ennis, D. B., Itoh, A., Bothe, W., Swanson, J. C., Karlsson, M., Kuhl, E., Miller, D. C., Ingels, N. B.
  2008; 295 (3): H1141-H1149
- **On local tracking algorithms for the simulation of three-dimensional discontinuities** *COMPUTATIONAL MECHANICS*
  Jaeger, P., Steinmann, P., Kuhl, E.
  2008; 42 (3): 395-406
- **A note on the generation of periodic granular microstructures based on grain size distributions** *INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS*
  MEIER, H. A., Kuhl, E., Steinmann, P.
  2008; 32 (5): 509-522
- **Time-dependent fibre reorientation of transversely isotropic continua - Finite element formulation and consistent linearization** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  Himpel, G., Menzel, A., Kuhl, E., Steinmann, P.
  2008; 73 (10): 1413-1433
- **Brittle fracture during folding of rocks: A finite element study** *PHILOSOPHICAL MAGAZINE*
  Jager, P., Schmalholz, S. M., Schmid, D. W., Kuhl, E.
  2008; 88 (28-29): 3245-3263
- **Computational modelling of thermal impact welded PEEK/steel single lap tensile specimens** *COMPUTATIONAL MATERIALS SCIENCE*
  Utzinger, J., Bos, M., Floeck, M., Menzel, A., Kuhl, E., Renz, R., Friedrich, K., Schlarb, A. K., Steinmann, P.
  2008; 41 (3): 287-296
- **Towards mulitscale computation of confined granular media - Contact forces, stresses and tangent operators** *Techn Mech*
  Meier HA, Steinmann P, Kuhl E
  2008; 28: 32-42
- **A continuum model for remodeling in living structures** *JOURNAL OF MATERIALS SCIENCE*
  Kuhl, E., Holzapfel, G. A.
  2007; 42 (21): 8811-8823
- **Diamond elements: A finite element/discrete-mechanics approximation scheme with guaranteed optimal convergence in incompressible elasticity** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  Hauret, P., Kuhl, E., Ortiz, M.
  2007; 72 (3): 253-294
- **Computational modeling of arterial wall growth - Attempts towards patient-specific simulations based on computer tomography** *Workshop on Mathematical Methods and Models of Continuum Biomechanics*
  Kuhl, E., Maas, R., Himpel, G., Menzel, A.
  SPRINGER HEIDELBERG.2007: 321–31
- **Computational modeling of mineral unmixing and growth - An application of the Cahn-Hilliard equation** *COMPUTATIONAL MECHANICS*
  Kuhl, E., Schmid, D. W.
  2007; 39 (4): 439-451
- **Towards the algorithmic treatment of 3D strong discontinuities** *COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING*
  Mergheim, J., Kuhl, E., Steinmann, P.
  2007; 23 (2): 97-108
- **On the application of Hansbo's method for interface problems** *IUTAM Symposium on Discretization Methods for Evolving Discontinuities*
  Kuhl, E., Jaeger, P., Mergheim, J., Steinmann, P.
  SPRINGER.2007: 255–265
- **On deformational and configurational mechanics of micromorphic hyperelasticity - Theory and computation** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Hirschberger, C. B., Kuhl, E., Steinmann, P.

2007; 196 (41-44): 4027-4044

- **A discontinuous Galerkin method for the Cahn-Hilliard equation** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Wells, G. N., Kuhl, E., Garikipati, K.
  2006; 218 (2): 860-877
- **On the convexity of transversely isotropic chain network models** *Symposium on Instabilities Across the Scales*
  Kuhl, E., Menzel, A., Garikipati, K.
  TAYLOR & FRANCIS LTD.2006: 3241–58
- **An illustration of the equivalence of the loss of ellipticity conditions in spatial and material settings of hyperelasticity** *EUROPEAN JOURNAL OF MECHANICS A-SOLIDS*
  Kuhl, E., Askes, H., Steinmann, P.
  2006; 25 (2): 199-214
- **Modeling and simulation of remodeling in soft biological tissues** *IUTAM Symposium on Mechanics of Biological Tissue*
  Kuhl, E., Menzel, A., Garikipati, K., Arruda, E. M., Grosh, K.
  SPRINGER-VERLAG BERLIN.2006: 77–89
- **Structural optimization by simultaneous equilibration of spatial and material forces** *COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING*
  Askes, H., Bargmann, S., Kuhl, E., Steinmann, P.
  2005; 21 (8): 433-442
- **Remodeling of biological tissue: Mechanically induced reorientation of a transversely isotropic chain network** *JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS*
  Kuhl, E., Garikipati, K., Arruda, E. M., Grosh, K.
  2005; 53 (7): 1552-1573
- **A finite element method for the computational modelling of cohesive cracks** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  Mergheim, J., Kuhl, E., Steinmann, P.
  2005; 63 (2): 276-289
- **Computational modelling of isotropic multiplicative growth** *CMES-COMPUTER MODELING IN ENGINEERING & SCIENCES*
  Himpel, G., Kuhl, E., Menzel, A., Steinmann, P.
  2005; 8 (2): 119-134
- **A hyperelastodynamic ALE formulation based on referential, spatial and material settings of continuum mechanics** *ACTA MECHANICA*
  Kuhl, E., Steinmann, P.
  2005; 174 (3-4): 201-222
- **Computational modeling of hip replacement surgery - Total hip replacement vs. hip resurfacing** *Techn Mech*
  Kuhl E, Balle F
  2005; 25: 107-114
- **Material force method. Continuum damage & thermo-hyperelasticity** *EUROMECH Colloquium 445*
  Denzer, R., Liebe, T., Kuhl, E., Barth, F. J., Steinmann, P.
  SPRINGER.2005: 95–104
- **Computational spatial and material settings of continuum mechanics. An Arbitrary Lagrangian Eulerian formulation** *EUROMECH Colloquium 445*
  Kuhl, E., Askes, H., Steinmann, P.
  SPRINGER.2005: 115–125
- **A hybrid discontinuous Galerkin/interface method for the computational modelling of failure** *COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING*
  Mergheim, J., Kuhl, E., Steinmann, P.
  2004; 20 (7): 511-519
- **Computational modeling of healing: an application of the material force method** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*

Kuhl, E., Steinmann, P.
2004; 2 (4): 187-203

- **On the impact of configurational mechanics on computational mechanics** *Symposium on Configurational Mechanics held at the 5th Euromech Solid Mechanics Conference*
  Kuhl, E., Steinmann, P.
  A A BALKEMA PUBLISHERS.2004: 15–29
- **Material forces in open system mechanics** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Kuhl, E., Steinmann, P.
  2004; 193 (23-26): 2357-2381
- **Application of the material force method to thermo-hyperelasticity** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Kuhl, E., Denzer, R., Barth, F. J., Steinmann, P.
  2004; 193 (30-32): 3303-3325
- **An ALE formulation based on spatial and material settings of continuum mechanics. Part 1: Generic hyperelastic formulation** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Kuhl, E., Askes, H., Steinmann, P.
  2004; 193 (39-41): 4207-4222
- **An ALE formulation based on spatial and material settings of continuum mechanics. Part 2: Classification and applications** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Askes, H., Kuhl, E., Steinmann, P.
  2004; 193 (39-41): 4223-4245
- **Theory and numerics of geometrically non-linear open system mechanics** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
  Kuhl, E., Steinmann, P.
  2003; 58 (11): 1593-1615
- **Mass- and volume-specific views on thermodynamics for open systems** *PROCEEDINGS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
  Kuhl, E., Steinmann, P.
  2003; 459 (2038): 2547-2568
- **Computational modeling of growth - A critical review, a classification of concepts and two new consistent approaches** *COMPUTATIONAL MECHANICS*
  Kuhl, E., Menzel, A., Steinmann, P.
  2003; 32 (1-2): 71-88
- **An arbitrary Lagrangian Eulerian finite-element approach for fluid-structure interaction phenomena** *Int J Num Meth Eng*
  Kuhl E, Hulshoff S, de Borst R
  2003; 57: 117-142
- **On spatial and material settings of thermo-hyperelastodynamics for open systems** *ACTA MECHANICA*
  Kuhl, E., Steinmann, P.
  2003; 160 (3-4): 179-217
- **Thermodynamics of open systems with application to chemomechanical problems** *EURO-C 2003 Conference*
  Kuhl, E., Steinmann, P.
  A A BALKEMA PUBLISHERS.2003: 463–472
- **A thermodynamically consistent approach to microplane theory. Part II. Dissipation and inelastic constitutive modeling** *INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES*
  Kuhl, E., Steinmann, P., Carol, I.
  2001; 38 (17): 2933-2952
- **New thermodynamic approach to microplane model. Part II: Dissipation and inelastic constitutive modelling** *Int J Solids Structures*
  Kuhl E, Carol I, Steinmann P
  2001; 38: 2933-2952

- **A comparison of discrete granular material models with continuous microplane formulations** *Granular Matter*
  Kuhl E, D'Addetta GA, Herrmann HJ, Ramm E
  2000; 2: 123-135
- **Failure analysis for elasto-plastic material models on different levels of observation** *Int J Solids Structures*
  Kuhl E, Ramm E, Willam KJ
  2000; 37: 7259-7280
- **Microplane modelling of cohesive frictional materials** *Eur J Mech/A:Solids*
  Kuhl E, Ramm E
  2000; 19: S121-S143
- **An anisotropic gradient damage model for quasi-brittle materials** *Comp Meth Appl Mech Eng*
  Kuhl E, Ramm E, de Borst R
  2000; 183: 87-103
- **Parameter identification of gradient enhanced damage models with the finite element method** *Eur J Mech/A: Solids*
  Mahnken R, Kuhl E
  1999; 18: 819-835
- **Simulation of strain localization with gradient enhanced damage models** *Comp Mat Sci*
  Kuhl E, Ramm E
  1999; 16: 176-185
- **Aspects of non-associated single crystal plasticity: Influence of non-Schmid effects and localization analysis** *INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES*
  Steinmann, P., Kuhl, E., Stein, E.
  1998; 35 (33): 4437-4456
- **On the linearization of the microplane model** *Mech Coh Fric Mat*
  Kuhl E, Ramm E
  1998; 2: 343-364
- **Modelling and computations of instability phenomena in multisurface plasticity** *Comp Mech*
  Sawischlewski E, Steinmann P, Stein E
  1996; 18: 245-258