

Program parallel sessions

Bio-engineering

Tuesday June 17 at 14.10–15.30, room MV:H11, chair: P. Lötstedt

F. Woodhouse, B. Gardiner, D. Smith, [Reliability theory for the prediction of osteoarthritis](#)

G. Vidal Diez de Ulzurrun, [Modelling three-dimensional fungal growth: a spatially explicit lattice-free approach](#)

A. Fernandes, R. Costa, P. Gaspar, A. Neves, S. Vinga, [Dynamic Flux Balance Analysis for Modeling Lactococcus lactis Mannitol Production](#)

J. Krishnan, [Information processing in biochemical reaction networks](#)

Bio-imaging

Tuesday June 17 at 11.40–13.00, room MV:H11, chair: A. Heyden

C.-M. Svensson, I. Irmeler, B. Hofmann, H. P. Saluz, M. T. Figge, [Quantification of Arthritis Progression Using Micro-CT Data](#)

Z. Mokhtariasl [Automated Characterization of Cell Tracks Based on Local Migration Behaviour](#)

K. Psiuk-Maksymowicz, [Modelling cerebral vasculature based on magnetic resonance angiograms](#)

S. Hross, F. Theis, J. Hasenauer, [Model-based outliers treatment in image-based systems biology: filtering vs. noise model](#)

Cancer 1: Evolutionary and genetic dynamics

Monday June 16 at 11.40–13.00, room MV:F21, chair: M. Kimmel

N. A. Asghari Moghaddam, [Theoretical investigation of the effect of methylation on deoxy cytidine- deoxy guanosine dinucleotide](#)

J. Przybilla, T. Rolf, J. Galle, [Modeling DNA-Methylation Profiles in Ageing and Cancer](#)

S. T. Bickel, J. D. Juliano, J. D. Nagy, [Genetic drift rescues cancer from evolutionary suicide](#)

J. Galle, J. Przybilla, [Modeling the regulation of bivalent genes](#)

Cancer 2: Models of tumour invasion 1

Monday June 16 at 14.10–15.30, room MV:F23, chair: A. Anderson

H. Enderling, [Biphasic modulation of cancer stem cell driven solid tumor dynamics in response to reactivated replicative senescence](#)

N. Picco, A. R. A. Anderson, [The Role of Stem Cell Plasticity in Ductal Carcinoma](#)

A. Gerisch, [Uncertainty quantification in a model of tumour invasion](#)

B. Werner, [Simple principles can explain the in vivo population dynamics of tissue specific stem cells](#)

Cancer 3: Spatial models 1

Tuesday June 17 at 11.40–13.00, room MV:F21, chair: D. Basanta

R. Travasso, [Mechanical Forces in Vascular Sprouting](#)

A. Bethge, U. Schumacher, G. Wedemann, [Computer Simulation of the Metastatic Progression and Treatment Interventions](#)

A. M. Middleton, D. Stichel, F. Matthaeus, [A systems approach to studying collective migration of cancer cells](#)

Y. Lou, [Find the Glass Phase Transition Properties in a multi-cell model for tumorigenesis](#)

Cancer 4: Models of tumour invasion 2

Tuesday June 17 at 14.10–15.30, room MV:H12, chair: H. Enderling

G. Dimitriu, [POD-DEIM Approach on Dimension Reduction of a Model of Chemotactic Bacteria Patterns in Semi-Solid Medium](#)

R. E. Griswold, S. Podgrabinska, S. Das, B. E. Griffith, C. S. Peskin, M. Skobe, [Mathematical modeling predicts exponential growth kinetics for metastases in the lymphatic vessels in the absence of vascularization](#)

A. A. Zaidi, [Asymmetrical cell division arising in stem cells and cancer](#)

D. Trucu, M. A. J. Chaplain, [Multiscale modelling and analysis for cancer development: exploring the role of matrix-degrading enzymes and adhesion in invasion](#)

Cancer 5: Spatial models 2

Tuesday June 17 at 16.00–17.00, room MV:H12, chair: J. Foo

P. Domschke, D. Trucu, A. Gerisch, M. Chaplain, [Modelling the role of adhesion in the heterogeneous dynamics](#)

[of cancer invasion](#)

D. Basanta, [Modelling Tumour heterogeneity and homeostasis disruption in bone cancer](#)

R. Eljazi, [Mathematical Model of Glioma Invasion](#)

Cancer 6: Modelling therapies 1

Wednesday June 18 at 11.40–13.00, room MV:F26, chair: J.G. Scott

P. Vallois, [Stochastic models for tumors submitted to a radiotherapy treatment](#)

A. Martínez-González, [Therapies targeting hypoxia reduce tumor volume and delay the malignant transition in gliomas](#)

F. Fu, [Targeting cancer dormancy](#)

A. Swierniak, [Controllability of models of anticancer combined therapy with multiple delays in control](#)

Cancer 7: Models of tumour invasion 3

Thursday June 19 at 09.00–10.00, room MV:F21, chair: M. Chaplain

S. Galliani, [Multiscale modelling of vascular tumour growth and angiogenesis including tumour metabolism](#)

J. Krishnan, [A modelling framework for elucidating the interplay between drug transport and cellular effects in tumours](#)

M. Kolev, [On a nonstandard numerical algorithm for a mathematical model of cancer invasion](#)

Cancer 8: Spatial models 3

Thursday June 19 at 10.30–11.30, room MV:F21, chair: A. Bethge

S. Benzekry, [Metastatic dynamics and systemic inhibition of angiogenesis: implications for global dormancy and metastatic acceleration after surgery](#)

I. Kareva, [Normal wound healing and tumor angiogenesis as a game of competitive inhibition](#)

J. M. Belmonte, [Adhesion Defects are Sufficient to Initiate Polycystic Kidney Disease](#)

Cancer 9: Modelling therapies 2

Thursday June 19 at 11.40–13.00, room MV:F26, chair: P. Gerlee

R. Lintott, [Using process algebra to quantify the radiation induced bystander effect](#)

J. G. Scott, A. G. Fletcher, C. L. Timlin, D. Basanta, A. R. A. Anderson, P. K. Maini, [Towards patient-specific biology-driven heterogeneous radiation planning: using a computational model of tumor growth to identify novel radiation sensitivity signatures.](#)

K. Jacobsen, [The role of CCN1 in glioma virotherapy with oncolytic herpes simplex virus](#)

Cell and Tissue Biophysics 1: Aggregation

Monday June 16 at 16.00–17.00, room MV:F23, chair: O. Nerman

F. A. Davidson, [Swimming Patterns in Zoospores](#)

V. Milkevych, D. Batstone, [Modeling the Directional Growth of Aggregated Archaeal Cells](#)

P. I. Belobrov, [Mechanism of The Nanodiamond – Protein Collective Aggregation](#)

Cell and Tissue Biophysics 2: Signalling

Tuesday June 17 at 11.40–13.00, room Valdemar, chair: F. Gatto

G. Ascolani, [Breast Cancer and TGF \$\beta\$ signaling](#)

M. Sawicka, [Mathematical modelling of VEGF-VEGFR binding and trafficking](#)

P. I. Belobrov, [Cell-To-Cell Microfluidic Interaction Models for Tissue Biophysics](#)

Cell and Tissue Biophysics 3: Cytoskeleton and mobility

Tuesday June 17 at 14.10–15.30, room Valdemar, chair: A. Mardinoglu

C. Winkler, [The Flatness of Lamellipodia Explained by the Interaction Between Actin Dynamics and Membrane Deformation](#)

S. Hirsch, [A Model of Contractile Forces in Acto-Myosin Bundles](#)

V. Bonifaci, [Physarum Can Compute Shortest Paths](#)

C. Wollnik, [Substrate dependend stress fibre organisation dynamics in adult stem cells](#)

Cell and Tissue Biophysics 4: Tissue-level modelling

Wednesday June 18 at 11.40–13.00, room Euler, chair: P. Olofsson

A. Czirok, [Biomechanics of tissue movements](#)
R. O'Dea, [A multiscale analysis of tissue growth and nutrient transport in vitro](#)
P. Buske, J. Przybilla, M. Loeffler, J. Galle, [On the biomechanics of intestinal stem cell niche formation in vitro and in vivo](#)
E. G. Rens, R. Merks, [Mathematical modeling of mechanical cell-extracellular matrix interactions](#)

Cell and Tissue Biophysics 5: Organ-level modelling

Thursday June 19 at 10.30–11.30, room MV:F26, chair: P. Ghaffari Nouran

X. Fu, J. Belmonte, J. P. Sluka, M. Swat, J. A. Glazier, [Blood Flow and Oxygen Distribution in a Simulated 3D Liver Lobule](#)
K. A. J. White, B. Delgado-Charro, [Using mathematical models to exploit the potential of skin in non-invasive drug monitoring](#)
S. Schuster, H. Stark, [Blood is thicker than water – Calculating the optimal hematocrit](#)

Cell and Tissue Biophysics 6: Modelling of cell components

Thursday June 19 at 11.40–13.00, room Ascom, chair: S. Shoaie

A. Leier, C. You, T. Marquez-Lago, J. Piehler, [The effect of plasma membrane compartmentalization on receptor assembly dynamics](#)
N.-K. Lee, A.-Y. Kwon, [Computational Studies of B-Z transitions in DNA](#)
G. Carrero, C. Contreras, M. J. Hendzel, [Describing and quantifying the binding pathway of Histone H1](#)

Developmental Biology 1: Synchronization

Monday June 16 at 11.40–13.00, room MV:F23, chair: R. Tyson

K. Uriu, [Collective cell movement promotes synchronization of coupled genetic oscillators](#)
U. Zubairova, S. Nikolaev, A. Doroshkov, D. Afonnikov, [Computational model of trichome spacing pattern formation on growing linear leaf blade](#)
A. V. Doroshkov, U. Zubairova, M. Genaev, S. Nikolaev, T. Pshenichnikova, D. Afonnikov, [Application of systems biology approach to analyze the development of wheat leaf pubescence](#)
M. Abedi, [Simulating multicellular systems using subcellular element approximations](#)

Developmental Biology 2: Propagation

Monday June 16 at 16.00–17.00, room MV:H11, chair: T. Glimm

S. Modhara, [Modelling and analysis of filopodia extension regulated by VEGF-Delta-Notch signalling in angiogenic tip-cell selection](#)
S. Diehl, A. Heyden, S. Perna, [A one-dimensional moving-boundary model for tubulin-driven axonal growth](#)
C.-M. Ghim, [Propagation of global resource fluctuations in a cell](#)

Developmental Biology 3: Growing networks

Tuesday June 17 at 14.10–15.30, room MV:F21, chair: S. Diehl

T. Glimm, [Modeling the galectin patterning network of the developing chick limb skeleton](#)
L. J. Schumacher, [Unravelling the rules of multicellular migration during development with models and experiments](#)
M. Palm, M. Dallinga, E. van Dijk, I. Klaassen, R. Schlingemann, R. Merks, [A parameter study of a computational angiogenesis model suggests that limited Apelin sensitivity enables tip cells to lead sprouts](#)

Developmental Biology 4: Collective movement

Tuesday June 17 at 16.00–17.00, room MV:F23, chair: D. Sumpter

J. Kursawe, [A quantitative mechanical model of developing epithelial sheets](#)
B. Vasiev, [Modelling chemotactic motion of cells in biological tissues](#)
S. Tanaka, [A Cell-Based Simulation Environment for Morphogenetic Problems](#)

Developmental Biology 5: Reaction

Thursday June 19 at 11.40–13.00, room Catella, chair: S. Tanaka

T. Marquez-Lago, [A selection criterion for spatial patterns in reaction-diffusion systems](#)
P. R. Taylor, [Accelerating reaction-diffusion simulations with non-local position jumping](#)
A. Manhart, [Model and Simulation of Actin-dependent Cell Movement](#)

Ecology 1: Random walks

Monday June 16 at 16.00–17.00, room MV:F31, chair: K. Leder

M. Lopez Garcia, [Grazing strategies for the control of gastrointestinal nematodes in sheep: a stochastic model in a seasonal environment](#)

M. Vela, M. A. Fontelos, [From Individual to Collective Dynamics in Argentine Ants](#)

E. Hanert, V. Vallaey, R. Tyson, E. Deleersnijder, [A fractional-order diffusion model to predict transgenic pollen dispersal](#)

Ecology 2: Diffusion and beyond

Tuesday June 17 at 11.40–13.00, room Euler, chair: E. Baake

Y. Kubo, Y. Iwasa, [Phase diagram of a fish school model: marches versus circles determined by the relative strength of alignment and cohesion](#)

R. Beyer, [Modeling Tree Crown Expansion with a Biomass Transport Equation](#)

G. Marion, [The ecology of wildlife disease surveillance](#)

A. Worton, [Incorporating environmental factors into tick-borne disease models](#)

Ecology 3: Seasons

Tuesday June 17 at 14.10–15.30, room MV:F23, chair: G. Meszéna

J. G. Donohue, P. T. Piiroinen, [Mathematical modelling of seasonal migration](#)

R. C. Tyson, G. Culos, [Response of Poikilotherms to Extreme Temperature Events](#)

A. Telschow, S. Sakai, [Evolutionary stability and geographic variation of pollination networks](#)

Ecology 4: Biodiversity

Wednesday June 18 at 11.40–13.00, room Catella, chair: T. Britton

W. Huang, [A resource-based model of multi-species competitions under mutations](#)

S. Catterall, G. Marion, [Emergence of diversity-stability-productivity relationships in a generic multi-species resource competition framework](#)

G. Meszéna, G. Barabás, A. Szilágyi, [Niche theory for a complicated world](#)

C. Kazanci, [Resolving the complexity of ecosystem models using network theory](#)

Ecology 5: Game Theory

Thursday June 19 at 09.00–10.00, room MV:H12, chair: J. Ripa

M. Lindh, E. Wadbro, L. Zhang, Å. Brännström, [Evolution of root and shoot growth allocation in trees](#)

J. Teichmann, [Insights from the Application of Temporal Difference Learning in Models of Foraging](#)

JH. Lee, K. Sigmund, U. Dieckmann, Y. Iwasa, [Games of Corruption: How to Suppress Illegal Logging](#)

Ecology 6: Plasticity

Thursday June 19 at 10.30–11.30, room Ascom, chair: P. Lundberg

M. Utz, H. Dugdale, F. Weissing, J. Komdeur, [Evolution of dispersal syndromes](#)

F. Pfab, [Reversible phenotypic plasticity with continuous adaptation](#)

Epidemics 1: Dynamics

Monday June 16 at 11.40–13.00, room Ledningsrummet, chair: O. Diekmann

K. Y. Leung, M. Kretzschmar, O. Diekmann, [STIs on dynamic partnership networks – characterizing R₀](#)

T. Mahdjoub, C. Kribs-Zaleta, [Assessment of the invasion speed of triatomine populations, vectors of Chagas disease](#)

J. C. Prentice, [Counter-intuitive responses to movement-based disease control measures in livestock](#)

G. Beaunée, E. Vergu, P. Ezanno, [Modeling of the spread and control of Mycobacterium avium subsp. paratuberculosis in a metapopulation of cattle herds](#)

Epidemics 2: Stochastic models 1

Monday June 16 at 14.10–15.30, room MV:F33, chair: J. Amador

C. Kamp, M. Moslonka-Lefebvre, S. Alizon, [Epidemic spread on weighted networks – the impact of casual contacts](#)

P. Trapman, A. Serafimović, [End of an SIR epidemic on a random network](#)

S. C. Bilson, [Geometric Epidemics: An application of differential geometric sampling methods to stochastic epidemic models](#)

M. Ferrante, [On a simple stochastic epidemic SEIHR model and its diffusion approximation](#)

Epidemics 3: Deterministic models 1,

Monday June 16 at 16.00–17.00, room MV:F21, chair: M. Gyllenberg

M. Souza, [Vector-borne disease dynamics with host circulation](#)

N. Tuncer, [Dynamics of low and high pathogenic avian influenza in wild and domestic bird populations](#)

H. Nishiura, [Probabilistic differential diagnosis of imported cases: A case study of MERS](#)

Epidemics 4: Stochastic models 2

Tuesday June 17 at 11.40–13.00, room MV:F23, chair: P. Trapman

S. Selmane, [Influence of Climate Variables on Scorpion Envenomation](#)

J.-B. Burie, [How to adapt vine growth and cultural practices to better control an outbreak of powdery mildew on a vineyard?](#)

J. Greenman, [The exclusion problem in seasonally forced eco-epidemiological systems](#)

J. Panovska-Griffiths, [Application of mathematical modelling to answering policy relevant questions: How do we optimally allocate resources in HIV targeted intervention preventions?](#)

Epidemics 5: Deterministic models 2

Tuesday June 17 at 14.10–15.30, room Euler, chair: A. Pugliese

C. Hadjichrysanthou, [Which nodes should be prioritised for intervention to effectively control epidemic outbreaks in networks?](#)

J. M-S. Lubuma, Y. A. Terefe, [Discretization of the SIS-Volterra model by nonstandard finite difference method](#)

L. Laguzet, [Optimal vaccination policies as Mean Field Games equilibriums](#)

G. Turinici, [Modeling the individual vaccination decisions: a structural explanation](#)

Epidemics 6: Agent based models

Tuesday June 17 at 16.00–17.00, room Ledningsrummet, chair: A. Traulsen

R. Beard, [A game-theoretic approach to diagnostic test adoption and disease control in livestock](#)

A. Kleczkowski, S. Maharaj, S. Rasmussen, L. Williams, [Human Behaviour During Epidemics: Results of a Virtual Experiment](#)

V. D. Perminov, [New agent-based model for an influenza epidemic spreading in cities](#)

Epidemics 7: Stochastic models 3

Wednesday June 18 at 11.40–13.00, room MV:F21, chair: I. Kaj

M. J. Lopez-Herrero, [Measuring Disease Spread in Stochastic Epidemic Models](#)

R. Wilkinson, [Markovian Susceptible-Infectious-Susceptible \(SIS\) Dynamics on Finite Networks: Endemic Prevalence and Invasion Probability](#)

K. Mizumoto, [Vaccination and Clinical Severity: Is the Effectiveness of Contact Tracing and Case Isolation Hampered by Past Vaccination](#)

T. Kinyanjui, L. Pellis, H. Thomas, [Information Content of Household-stratified Epidemics](#)

Epidemics 8: Tuberculosis and hepatitis

Wednesday June 18 at 11.40–13.00, room MV:F23, chair: C. Tomasetti

F. Luciani, [Exploring viral evolution to characterise HCV transmission dynamics in a high-risk prison population](#)

P. Rodrigues, [Impact of treatment length and treatment default on drug-resistant tuberculosis epidemiology](#)

G. Guzzetta, M. Ajelli, D. Kirschner, S. Merler, [Evaluation of tuberculosis control programs in low-burden settings](#)

Epidemics 9: Deterministic models 3

Thursday June 19 at 09.00–10.00, room MV:F23, chair: C. Guíterrez- Pérez

A. A. Khan, [Analysis of a Deterministic Model for the Transmission Dynamics of Influenza](#)

H. Hessami, N. Glade, [A Study of Epidemiological Processes by Criticality Analysis](#)

J. Greenman, [The exclusion problem in seasonally forced eco-epidemiological systems](#)

Epidemics 10: Deterministic models 4

Thursday June 19 at 10.30–11.30, room MV:F23, chair: B. Wennberg

Z. Islam, S. C. Bishop, N. J. Savi, R. R. Rowland, J. K. Lunney, B. Triple, A. Doeschl-Wilson, [Combining statistical and dynamic modelling approaches to within-host analysis of Porcine Reproductive and Respiratory Syndrome \(PRRS\) virus infections](#)

J. Ripoll, [Epidemics and density-dependent diffusion on heterogeneous metapopulations](#)

A. Dénes, G. Röst, [Global dynamics of compartmental models for the spread of ectoparasite-borne diseases](#)

Epidemics 11: HIV, Dengue and Transmission

Thursday June 19 at 11.40–13.00, room MV:F23, chair: J. Ripoll

M. Ghosh, [Mathematical Modelling of HIV/AIDS in a sex-structured population; Effect of Case Detection and Treatment](#)

S. Duwal, S. Winkelmann, C. Schütte, M. von Kleist, [Optimal treatment- and diagnostic strategies in the context of ‘treatment for prevention’ against HIV-1 in resource-rich and -poor settings](#)

H. Woodall, B. Adams, [Stochastic modelling for age-structured dengue epidemiology with and without seasonal variation](#)

E. Ogg, [Modelling Aquatic Viral Dynamics: The Importance of Transmission](#)

Evolution and Populations Genetics 1: Evolution of resistance

Monday June 16 at 11.40–13.00, room Euler, chair: A. Hoyle

A. Hoyle, [Predicting the evolution of resistance in Atlantic salmon in response to a macro-parasite invasion](#)

A. Vollrath, [Multi-gene-loci inheritance in resistance modeling for polyploidy populations](#)

E. Rousseau, J. Coville, A. Palloix, F. Fabre, L. Mailleret, B. Moury, F. Grogard, [Protection of the durability of major resistance genes to plant viruses with quantitative resistance, a modeling approach](#)

R. Donnelly, [The ecology of resistance – density dependent feedbacks to optimal investment](#)

Evolution and Populations Genetics 2: Adaptation 1

Monday June 16 at 11.40–13.00, room MV:F33, chair: P. Jagers

I. Hoellinger, J. Hermisson, [Mathematical Models of Speciation with Gene Flow](#)

H. Uecker, D. Setter, J. Hermisson, [Adaptive gene introgression after secondary contact](#)

F. Chalub, M. Souza, [Continuous approximations of Discrete Processes](#)

M. Kitlas, M. Startek, A. Le Rouzic, D. Grzebelus, A. Gambin, [Spatial model of stress-induced transposon proliferation](#)

Evolution and Populations Genetics 3: Evolutionary games

Monday June 16 at 14.10–15.30, room MV:F31, chair: R. Bürger

J. Peña, [Evolutionary multiplayer games and polynomials in Bernstein form](#)

J. Hofbauer, [Global Stability in Selection-Migration Models](#)

T. Nurmi, [Evolution of resource utilization: the coexistence of specialists and generalists](#)

M. Sadosky, [Direct evidence of the strong co-evolution of somatic and organelle genomes](#)

Evolution and Populations Genetics 4: Branching processes 1

Monday June 16 at 14.10–15.30, room Ledningsrummet, chair: F. Klebaner

E. E. Dyakonova, [Branching processes in random environment](#)

V. A. Vatutin, [Macroscopic and microscopic structures of the family tree for a decomposable branching process](#)

S. Sagitov, [Brownian motion on the Yule tree: variance of the sample variance](#)

K. Bartoszek, S. Sagitov, [Tree-free phylogenetic comparative methods: what can we say about a species’ trait without observing the phylogeny](#)

Evolution and Populations Genetics 5: Selection

Tuesday June 17 at 11.40–13.00, room MV:F31, chair: E. Dyakonova

C. F. Mugal, I. Kaj, [Modeling the impact of selection in protein coding genes](#)

C. F. Mugal, I. Kaj, [Measures of natural selection in protein coding genes](#)

M. P. Startek, A. Le Rouzic, A. Gambin, [On the existence and stability of equilibrium probability measures in Gaussian mutator models with environmental stress within Fisher’s geometric framework](#)

K. Gogolewski, A. Gambin, D. Grzebelus, A. Le Rouzic, M. Startek, [The impact of sexual vs. asexual reproduction on transposon proliferation dynamics](#)

Evolution and Populations Genetics 6: Branching processes 2

Tuesday June 17 at 11.40–13.00, room MV:F33, chair: V. Bansaye

P.Jagers, [On the life of populations in habitats with constant carrying capacity](#)

C. Gutiérrez Pérez, [ABC methodology to estimate the rate of mutation of a y-linked gene in a two-sex branching model](#)

C. Minuesa Abril, [Minimum Hellinger distance estimation for Controlled Branching Processes](#)

G. Plazzotta, C. Colijn, [Crump-Mode-Jagers branching processes in disease outbreaks](#)

Evolution and Populations Genetics 7: Adaptation 2

Tuesday June 17 at 14.10–15.30, room MV:F31, chair: M. Birkner

J. Toivonen, [Adaptive dynamics on an environmental gradient that changes over a geological time-scale](#)

P. Gerrish, [Real time forecasting of near-future evolution: theory and experiments](#)

S.-C. Park, J. Krug, [Rate of adaptation in sexuals and asexuals: A solvable model of the Fisher-Muller effect](#)

T. A. Kessinger, [Quantifying the effects of adaptation on genealogies](#)

Evolution and Populations Genetics 8: Miscellaneous

Tuesday June 17 at 14.10–15.30, room MV:F33, chair: C. Wiuf

R. P. Mondaini, [The Classification of Protein Domains into Families and Clans through Entropy Measures based Methods](#)

T. D. Tran, [Information geometry and the Wright-Fisher model of mathematical population genetics](#)

M. Souza, [Multiscaling Modelling in Evolutionary Dynamics](#)

M. Broom, [A dynamic network population model with strategic link formation governed by individual preferences](#)

Evolution and Populations Genetics 9: Structured populations

Wednesday June 18 at 11.40–13.00, room MV:H12, chair: K. Parvinen

P. Lombardo, L. Dall'Asta, A. Gambassi, [Non-monotonic effects of migration in subdivided populations](#)

D. Balaz, C. A. Cobbold, M. J. Stear, J. P. Jiménez de Cisneros, R. Beard, L. Matthews, [Do sheep cheat themselves by mounting weak immune responses: an adaptive dynamics approach](#)

O. Zhdanova, [An effect of optimal harvest on an evolution of population with age structure](#)

K.K.Avilov, V.S. Solomka, N.V. Frigo, A.S. Karkach, A.A.Romanyukha, [N. gonorrhoeae NG-MAST genotype and antibiotic resistance profile: is there any correlation?](#)

Evolution and Populations Genetics 10: Ancestral structure

Wednesday June 18 at 11.40–13.00, room MV:F33, chair: V. Vatutin

S. Probst, [Type distributions on partitions and their ancestry in the Moran model with recombination](#)

M. Esser, [A duality relation for type distributions on partitions in the Moran model with recombination](#)

V. Bansaye, [Let Markov chains evolve along genealogies](#)

Evolution and Populations Genetics 11: Optimal fitness

Thursday June 19 at 11.40–13.00, room MV:F33, chair: J.A. J Metz

R. J. Clegg, R. J. Dyson, J.-U. Kreft, [Repair and not segregation of damage is the optimal unicellular ageing strategy](#)

M. Zagórski, [Evolutionary accessible pathways to global fitness maximum on generalized hypercubes](#)

Evolution and Populations Genetics 12: Evolutionary dynamics

Thursday June 19 at 11.40–13.00, room RunAn, chair: E. Kisdi

H. Weigang, M. Gyllenberg, E. Kisdi, [Evolution of condition-dependent immigration](#)

K. Parvinen, [Evolutionary dynamics of site-selection](#)

L. Su, [Clines With Partial Panmixia In An Environmental Pocket](#)

Immunology 1: In vivo

Tuesday June 17 at 11.40–13.00, room MV:H12, chair: D. Langeman

L. Kaderali, D. Clausznitzer, [Size matters: Mathematical modeling of the type-1 interferon induction](#)

H. Ikeda, [Quantification of the acute phase of virus infection in HIV-1 infected humanized mouse](#)

A. G. Lim, [Modelling HTLV-I as a Multi-Locus System](#)

N. Go, C. Bidot, C. Belloc, S. Touzeau, [Modelling the infection and immune dynamics induced by a pathogen targeting pulmonary macrophages: influence of strain virulence and host exposure](#)

Immunology 2: ODEs and beyond

Tuesday June 17 at 16.00–17.00, room MV:F33, chair: S. Touzeau

D. Langemann, [Reaction diffusion equations and the chronification of liver infections](#)

Y. Kakizoe, [Modeling ecliptic phase of SHIV infection in cell culture](#)

N. Y. den Breems, D. Kulasiri, [Signaling pathway and gene network regulation of NFkB and cytokine mRNA expression in Mastitis](#)

Physiology 1: Spatio-dynamical models

Monday June 16 at 11.40–13.00, room MV:F31, chair: K. Kopfer

R. Cherniha, J. Waniewski, [A mathematical model for fluid-glucose-albumin transport in peritoneal dialysis](#)

G. Celliere, A. Ghallab, S. Henkel, S. Hoehme, F. Schliess, S. Zellmer, J. Hengstler, D. Drasdo, [Integrative modelling and experimental validation of ammonia detoxification after drug induced liver damage](#)

M. Baker, [Spatial modelling of cytokine dynamics within osteoarthritic cartilage](#)

A. Bolli, A. Salvador, [Microorganism's growth-robustness trade-off explained by simple general principles](#)

Physiology 2: Distributed systems

Tuesday June 17 at 11.40–13.00, room Catella, chair: L. Bowden

K. H. Kopfer, [A mechano-chemical model of neutrophil polarization](#)

O. Rukhlenko, K. Zlobina, G. Guria, [Mathematical modeling of hydrodynamical activation of intravascular blood coagulation and formation of fibre-like structures in intensive blood flow](#)

C. R. Gaz, A. De Gaetano, S. Panunzi, G. Cremona, B. Patterson, [A simplified, geometrical approach to the PKPD of inhaled bronchodilators](#)

P. Roberts, H. Byrne, A. Foss, P. Luthert, E. Gaffney, [Mathematical Models of Retinal Degeneration](#)

Physiology 3: Energy expenditure, insulin secretion and wound healing

Tuesday June 17 at 16.00–17.00, room MV:F26, chair: M. Baker

M. Jacquier, F. Crauste, C. Soulage, H. Soula, [Model of the dynamics of food intake, body weight and energy expenditure in rats](#)

A. De Gaetano, C. R. Gaz, P. Palumbo, S. Panunzi, [Population-of-controllers model explains heterogeneous insulin secretion experiments](#)

L. Bowden, [A morphoelastic model of dermal wound healing](#)

Physiology 4: Plants

Thursday June 19 at 09.00–10.00, room MV:F26, chair: H. Jönsson

E. Maréchal, O. Bastien, [Modeling of regulatory loops controlling galactolipid biosynthesis in the inner envelope membrane of chloroplasts](#)

L. Bridge, [Modelling the impact of plant shoot architecture on leaf cooling: coupled heat and mass transfer simulations](#)

V. Mironova, F. Kazantsev, [Mathematical modeling of auxin transport in root meristem of pin mutants](#)

Population Dynamics and Conservation Biology 1: Populations models 1

Monday June 16 at 11.40–13.00, room MV:H11, chair: E. Yarovaya

G. P. Karev, [Frequency-dependent models of population dynamics](#)

S. Radosavljevic, B. O. Turesson, U. Wennergren, V. Kozlov, [Estimating effective bounds of population growth in a variable environment](#)

Population Dynamics and Conservation Biology 2: Structured populations

Monday June 16 at 14.10–15.30, room MV:H11, chair: H. Meinhardt

M. A. Gilbert, S. M. White, J. M. Bullock, E. A. Gaffney, [Spreading Speeds for Stage Structured Plant Populations in Fragmented Landscapes](#)

K. Pichor, [Stochastic semigroups in structured population models](#)

K. Ejima, [Consequences of Obesity Epidemic; the Impact of "Vertical Transmission" of Obesity on Population Dynamics](#)

Population Dynamics and Conservation Biology 3: Optimization

Monday June 16 at 16.00–17.00, room MV:F33, chair: K. Bartoszek

A. Masic, H. J. Eberl, [On optimization of substrate removal in a bioreactor with biofilms and suspended biomass](#)

M. Weeder mann, [Optimization of biogas production in a model for anaerobic digestion with inhibition](#)

M. Bengfort, [The influence of turbulence on the competition between buoyant and non-buoyant plankton prey species in a shallow lake](#)

Population Dynamics and Conservation Biology 4: Miscellaneous

Tuesday June 17 at 11.40–13.00, room Ledningsrummet, chair: T. Lindström

T. A. Lindström, [Logistic approximations and their consequences for bifurcations patterns and long-run dynamical behavior](#)

B. Ghosh, F. Grogard, L. Mailleret, [Optimal natural enemies deployment in patchy environments for augmentative biological control](#)

F. S. Berezovskaya, G. P. Karev, [The bifurcation analysis of the conceptual models of the CRISPR host-virus population dynamics](#)

Population Dynamics and Conservation Biology 5: Population models 2

Tuesday June 17 at 14.10–15.30, room Ledningsrummet, chair: T. Kurtz

E. B. Yarovaya, [Spatio-temporal Structure of Branching Random Walks in Non Homogeneous Environments](#)

E. Antonenko, [Weakly Supercritical Branching Random Walks](#)

N. El Saadi, Z. Benbaziz, [On the analytical study of a nonlinear SPDE arising as a model of phytoplankton aggregation](#)

S. Lagarto, C. A. Braumann, D. Gomes, [A multivariate SDE model for the time evolution of death rates with an application to the Portuguese population](#)

Population Dynamics and Conservation Biology 6: Age-structured populations

Tuesday June 17 at 16.00–17.00, room RunAn, chair: H. Uecker

R. Wieczorek, [A nonlinear age-structured model of semelparous species](#)

V. V. Akimenko, [Equilibrium and quasi-stationary states of non-linear age-structured monocyclic cell population model](#)

F. Olsson, O. Hössjer, [Estimation of the variance effective population size in age-structured populations](#)

Population Dynamics and Conservation Biology 7: Conservation strategies

Wednesday June 18 at 11.40–13.00, room MV:H11, chair: P. Mostad

N. L. P. Lundström, [Pareto-efficient fishing strategies allow large conservation benefits for small costs in yield](#)

N. Apreutesei, [An optimal control problem for a reaction-diffusion model of invasive species](#)

B. I. Camara, [Bayesian method for assessing environmental pollution effects on organism dynamic energy budget](#)

R. El Cheikh, S. Bernard, N. El Khatib, [Modeling circadian clock-cell cycle interaction effects on cell population growth rates](#)

Population Dynamics and Conservation Biology 8: Competition

Thursday June 19 at 09.00–10.00, room Ascom, chair: S. Sagitov

N. Stahnke, [Intraspecific competition models considering two resources](#)

R. Rudnicki, [On a sexual model of phenotypic evolution](#)

C. Fritsch, [Mass-structured individual based model for the chemostat](#)

Population Dynamics and Conservation Biology 9: Predator-prey systems

Thursday June 19 at 10.30–11.30, room MV:H12, chair: R. Rudnicki

H. Kettle, [Modelling stage-structured populations of crop pathogens: 1\) under environmental change and 2\) as part of a food web, using delay differential equations](#)

J. da Silva, [Dynamics of spatial pattern networks in predator-prey systems](#)

M. Teixeira Alves, F. Hilker, [How symbionts turning from friends to foes induce Allee effects in predators](#)

Population Dynamics and Conservation Biology 10: Population and disease models

Thursday June 19 at 11.40–13.00, room MV:H12, chair: M. Doumic

P. Pang, [Traveling wavefronts in population and disease models with nonlocal reaction and delay](#)
L. Mailleret, V. Lemesle, F. M. Hamelin, V. Calcagno, F. Grognard, [Modelling populations subjected to pulsed taking regimes](#)
R. Cherniha, [Symmetry based methods for constructing exact solutions of the diffusive Lotka-Volterra system](#)

Regulatory Networks 1: Noise, bistability, and stochasticity

Monday June 16 at 11.40–13.00, room MV:F26, chair: S.S. Samal

J. Albert, [The cell nucleus regulates not only the dynamics of gene expression, but also its noise](#)
M. Tyran-Kaminska, [Dynamics of a Bistable Molecular Switch](#)
D. A. Oyarzún, J.-B. Lugagne, G.-B. V. Stan, [Noise propagation in enzymatic reactions under...](#)
W. Siwek, [Stochastic model of gene expression](#)

Regulatory Networks 2: Gene expression and regulation

Tuesday June 17 at 11.40–13.00, room MV:F26, chair: J. Albert

J. Krishnan, [Elucidating the role of termination-based feedback mechanisms in mRNA translation in yeast](#)
T. T. Marquez-Lago, [Non-classic effects in stochastic gene expression](#)
J. Miękisz, [Time delays in stochastic models of gene regulation](#)
L. Roselius, D. Langemann, J. Müller, B. Hense, D. Jahn, R. Münch, [Modeling and analysis of a gene-regulatory feed-forward loop with basal expression of the second regulator](#)

Regulatory Networks 3: Dynamics and feedback

Tuesday June 17 at 14.10–15.30, room MV:F26, chair: M. Tyran-Kaminska

P. Rashkov, [Modelling spatio-temporal dynamics in regulatory networks for cell polarity](#)
K. Doherty, [A Mathematical Model of Intermolecular Autophosphorylation with an Application to Aurora B Kinase](#)
M. Kochanczyk, E. Kozłowska, P. Kocieniewski, J. Jaruszewicz, W. S. Hlavacek, T. Lipniacki, [Relaxation oscillator dynamics of MAPK cascade enabled by local excitation–global inhibition](#)
C. Kuttler, [Bacterial quorum sensing with negative feedback\(s\)](#)

Regulatory Networks 4: Bistability, cell cycle control, and signaling

Tuesday June 17 at 16.00–17.00, room MV:F31 chair: J. Hasennauer

B. Planqué, [Understanding bistability in yeast glycolysis using general properties of metabolic pathways](#)
M. Bogdał, B. Hat, M. Kocharczyk, T. Lipniacki, [p53 regulatory module controlling cell cycle arrest and apoptosis in response to irradiation](#)
G. Selvaggio, P. M. B. M. Coelho, A. Salvador [Integration between signaling and antioxidant protection by the peroxiredoxin/thioredoxin/thioredoxin-reductase system](#)

Regulatory Networks 5: Distributed systems

Wednesday June 18 at 11.40–13.00, room MV:F31, chair: K. Doherty

Z. Peradzynski, B. Kazmierczak, [Modelling Fast CIC1 Calcium Waves](#)
D. Lakatos, [Autocrine FGF feedback can establish distinct states of Nanog expression in pluripotent stem cells](#)
Y. Kalaidzidis, R. Villaseñor, M. Zerial, [Regulation RTK signaling specificity by tuning early endosome distribution](#)

Regulatory Networks 6: Cartilage and miRNA

Wednesday June 18 at 11.40–13.00, room Ascom, chair: L. Roselius

J. Kerkhofs, H. Van Oosterwyck, L. Geris, [The search for a core functionality network in chondrocyte differentiation using heuristic and genetic algorithms](#)
M. Germain, J. Kerkhofs, L. Geris, [Simulation and analysis of bistability in osteochondrogenesis](#)
J. Smieja, M. Dolbniak, [Mathematical models of mi-RNA dependent gene regulation in experimental procedures](#)
A. M. Samsonov, M. A. Duk, M. G. Samsonova, [Early stage dynamics of miRNA-driven FFL depends upon miRNA action](#)

Regulatory Networks 7: Signalling processes

Thursday June 19 at 09.00–10.00, room MV:F33, chair: F. Matthäus

F. Matthäus, [From signaling processes to large-scale behavior – E.coli chemotaxis, search strategy and pattern formation](#)

J. Smieja, M. Kardynska, [Mathematical modeling of interactions between HSF and NFkB pathways](#)
B. Engelhardt, R. Schrage, C. Tränkle, K. Mohr, M. Kschischo, H. Fröhlich, [Mathematical Analysis and Joint Modeling of the M2 Receptor-dependent Signaling And Secondary Messenger Network in CHO Cells](#)

Regulatory Networks 8: Computational methods

Thursday June 19 at 10.30–11.30, room MV:F33, chair: W. Siwek

S. S. Samal, O. Radulescu, D. Grigoriev, H. Fröhlich, A. Weber, [A Tropical Method based on Newton Polygon Approach for Algebraic Analysis of Biochemical Reaction Networks](#)

P. Palumbo, F. Carravetta, [Exact quadratization of nonlinear systems: a useful tool in mathematical biology](#)

A. Charzyńska, [Multi-parameter sensitivity analysis based on the conditional mutual information](#)

Regulatory Networks 9: Stochastic mechanisms

Thursday June 19 at 11.40–13.00, room Pascal, chair: J. Tyrcha

J. Tyrcha, J. Hertz, [Stochastic stability of a compound cell-cycle model](#)

A. Milias-Argeitis, P. Bauer, S. Engblom, M. Khammash, [Exploiting stochastic focusing for noise reduction through feedback](#)

M. Komorowski, [Identification of noise sources in gene regulatory and signal transduction networks](#)

Regulatory Networks 10: Inference

Thursday June 19 at 11.40–13.00, room MV:F21, chair: B. Planqué

G. A. Rempala, [Algebraic Statistical Model for Biochemical Dynamics Inference](#)

F. Froehlich, J. Hasenauer, F. Theis, [Parameter Estimation for the System Size Expansion](#)

N. Sfakianakis, M. Simon, [Sparsity promoting Bayesian parameter estimation and uncertainty quantification. Application to the gap gene system of Drosophila melanogaster](#)

J. Hasenauer, C. Hasenauer, T. Hucho, F. Theis, [Unraveling subpopulation structures and dynamics with ODE constrained mixture modeling](#)