UNIVERSITÀ TELEMATICA
INTERNAZIONALE UNINETTUNO

SCHEDA BIOGRAFICA

Le informazioni contenute in questa scheda verranno pubblicate sul sito dell'Università Telematica UNINETTUNO

Corso di Laurea: Ingegneria

Insegnamenti: Complementi di matematica - Metodi e modelli di meccanica strutturale

Nome: Giuseppe

Cognome: Pontrelli

e-mail: giuseppe.pontrelli@uninettunouniversity.net

Curriculum (in italiano)

Titolo di studio: Laurea (con lode) in matematica, Università di Bari (1982).
Lingue straniere: inglese, francese.
Posizione attuale: Dirigente di ricerca CNR.
Competenze e interessi scientifici: Fluidodinamica e meccanica computazionale, modellistica, analisi numerica e matematica applicata, problemi di diffusione e trasporto in biologia e medicina.
Web: www.iac.cnr.it/~pontrell/
H-index (Google scholar): 32

Attività scientifica ed incarichi :
- Responsabilit`a di progetti di ricerca CNR (1998-2010).
- Coordinatore scientifico dell'unità italiana del gruppo di lavoro ERCIM IM2IM: Informatics and mathematics applied to interventional medicine.
- Partecipante del progetto europeo RTN: Mathematical Modelling for Haemodynamics (HaeMOdel), coord. A. Quarteroni, 2002-2006.
- Participante del progetto europeo STREP: Integrated microfluidic bench technologies for active control of unconventional fluid by functionalised material interface of complex geometry microchannels (INFLUS), coord. D'Appolonia, 2006-2008.
- Partecipante del progetto bandiera Interomics (coord. L. Milanesi, 2012-2015).
- Responsabilità scientifica di progetti bilaterale Italia-Portogallo (CNR-FCT): Multiscale analysis and numerical simulation of mathematical models in hemodynamics and hemorheology (2007–

2010) e Novel mathematical modelling for drug delivery enhanced by electrical fields (2015–2016).
- Participante al progetto europeo ERC NANOJETS, PI. D. Pisignano, 2013-2016.
- Participante al progetto europeo ERC COPMAT, PI. S. Succi, 2017-2022.
- Membro di comitato scientifico di conferenze internazionali.
- Membro delle società italiane SIMAI e INDAM (GNCS).

Attività editoriale:
- Editore del libro: Wall-fluid interactions in physiological flows, Adv. Comp. Bioeng., 6, WIT Press, 2004.
- Editore del libro: Modelling in Medicine and Biology VI, WIT Trans. Biomed. Health, 8, WIT Press, 2005.
- Membro del comitato editoriale delle riviste: Mathematical Biosciences (Elsevier), Special Topics Reviews in Porous Media: An International Journal, Journal of Porous media (Begell House), Computational and mathematical methods in medicine (Hindawi).

Finanziamenti e posizioni di professore visitatore:
- Visitatore presso INRIA-REO Rocquencourt (Francia), programma Short-Term Mobility CNR (2004).
- Visitatore presso IMA, Universit di Minneapolis (USA) (2006).
- Visitatore presso University of Tokyo, invitato a 2nd JSIAM-SIMAI joint conference, Kobe (Giappone) (2000).
- Visitore presso CEMAT- IST (Lisbona, Portogallo), programma Short-Term Mobility CNR (2007–2010).
- Visitatore presso Univ. Hallam Sheffield (UK) (2009–2012).
- Visitatore presso Univ. Strathclyde, Glasgow (UK), programma Short-Term Mobility CNR: Advanced modelling for release in drug-eluting stents (2014).
- Professore visitatore invitato “Mathematics for industry modelling week” presso Università di Glasgow (12-16 Sept. 2016), ECOST-TRAINING SCHOOL-TD1409- 120916-078284.
- Visitatore presso IMPA (Istituto Nacional de Matematica Pura e Aplicada), Rio di Janeiro (2016).
- Visitatore presso Università di Glasgow , 16-24 sett. 2016 & 4-20 ott. 2017, COST STSM TD 1409–MI-NET.
- Partecipazione al progetto PRIN (Bando 2017: Mathematics of active materials: from mechabiology to smart devices), P.I. L. Preziosi, 2018-2022.
- Partecipazione al progetto COPMAT, ERC Advanced Grant 2016 (N. 739964), P.I. S. Succi, 2018-2023 (www.copmat.eu)
- Responsabile italiano progetto bilaterale CNR-Royal Society (UK): Computational modelling and experimental validation of the drug delivery from multifunctional nanoparticles for cancer treatment (P. Gentile, Newcastle Univ., UK- G. Pontrelli, CNR,Italy), 2021-2023.

Altro:
- Autore di oltre 90 pubblicazioni in riviste internazionali, speaker invitato in conferenze internazionali.
- Organizzatore-chairman di minisimposi in conferenze internazionali.
- Consulente e revisore di riviste internazionali, tesi di dottorato e di progetti di ricerca italiani ed europei.
- Professore a contratto per corsi di laurea e di dottorato presso l’Università dell’Aquila, Università di Roma 3, Università di Roma “La Sapienza” .
- Relatore e/o correlatore di tesi di laurea e dottorato, tutoraggio di giovani ricercatori e studenti.

- Abilitazione nazionale all'insegnamento universitario (Settore Concorsuale 01/A5 - I Fascia 2018-2024).

Elenco di pubblicazioni (dal 2018)

Lavori pubblicati in riviste internazionali e capitoli di libri:

1. E. Di Costanzo, A. Giacomello, E. Messina, R. Natalini, G. Pontrelli, F. Rossi, R. Smits, M. Twarogowska, A discrete in continuous mathematical model of cardiac progenitor cells formation and growth as spheroid clusters (cardiospheres), Math. Med. & Biol., vol. 35, 1, pp. 121–144, 2018.
2. B. Kaoui, M. Lauricella, G. Pontrelli, Mechanistic modelling of drug release from multi-layer capsules, Comp. Biol. Med., vol. 93, pp. 149–157, 2018.
3. M. Lauricella, S. Melchionna, A. Montessori, D. Pisignano, G. Pontrelli, S. Succi, Entropic lattice Boltzmann model for charged leaky dielectric multiphase fluids in electrified jets, Phys. Rev. E, vol. 97, 033308, 2018.
4. E. Di Costanzo, A.I. Barakat, G. Pontrelli, Effect of flow on ATP/ADP concentration at endothelial cell surface: interplay between shear stress and mass transport, Z. Angew. Math. Mech., on line, 2018.
5. E.J. Carr, G. Pontrelli, Modelling mass diffusion for a multi-layer sphere immersed in a semi-infinite medium: application to drug delivery, Math. Biosci., vol 303, pp.1-9, 2018.
6. R. Du, Y. Wang, S. McGinty, G. Pontrelli, G. Wang et. al, Design and testing of hydrophobic core/ hydrophilic shell nano/micro particles for drug-eluting stent coating, NPG Asia materials 10, pp. 642–658, 2018.
7. C.M. McKittrick, G. Pontrelli, S. McGinty et al., Combining mathematical modelling with in vitro experiments to predict in vivo drug-eluting stent performance, J. Contr. Release, vol. 303, 151-161, 2019.
8. Y. Wang, K. Zhang, G. Pontrelli et al., Biomimetic nanotherapies: red blood cell based coreshell structured nanocomplexes for atherosclerosis management, Advanced Science, 1900172, 2019.
9. E.J. Carr, G. Pontrelli, Drug delivery from microcapsules: how can we estimate the release time?, Mathematical Biosciences 315, 108216, 2019.
10. M. Meere, G. Pontrelli, S. McGinty, Modelling phase separation in amorphous solid dispersions, Acta Biomaterialia 94, pp. 410–424, 2019.
11. Y. Yin, J. Wang, M. Yang, R. Du, G. Pontrelli, et al. Penetration of the blood-brain barrier and the anti-tumour effect of a novel PLGA-lysoGM1/DOX micelle drug delivery system, Nanoscale, vol. 12, pp. 2946–2960, 2020.
12. G. Pontrelli, E.J. Carr, A. Tiribocchi, S. Succi, Modelling drug delivery from multiple emulsions, Phys. Rev. E., 102, 023114, 2020.
13. G. Pontrelli, O. Farago, A Langevin dynamics approach for multi-layer mass transfer problems, Comp. Biol & Med., vol 124, 103932, 2020.
14. Y.Wang, K. Zhang, T. Li, S. McGinty, G. Pontrelli et al., Macrophage membrane functionalized biomimetic nanoparticles for targeted anti-atherosclerosis applications, Theranostics, vol. 11 (1), pp. 164–180, 2021.
15. G. Pontrelli, G. Toniolo, S. McGinty, D. Peri, S. Succi, C. Chatgilialoglu, Mathematical modelling of drug delivery from pH-responsive nanocontainers, Comp. Biol & Med., vol 131, 104238, 2021.

16. A. Jain, S. McGinty, G. Pontrelli, L. Zhou, Theoretical model for diffusion-reaction based drug delivery from a multilayer spherical capsule, Int. J. Heat Mass Transf., vol. 183, 122072, 2022.
17. S. Becker, A.V. Kuznetsov, D. Zhao, F. de Monte, G. Pontrelli, Model of drug delivery to populations composed of two cell types, J. Theor. Biol., vol. 534, 110947, 2022.
18. A. Jain, S. McGinty, G. Pontrelli, Drug diffusion and release from a bioerodible spherical capsule, Int. J. Pharmaceutics, vol. 616, 121442, 2022.

Curriculum (in inglese)

Education: Laurea (cum laude) in mathematics at University of Bari (1982).
Foreign languages: English, French.
Present position: CNR research Director.
Scientific interests: Computational fluid-dynamics and mechanics, mathematical modelling and numerical analysis, transport and diffusive processes in biology and biomedicine, drug delivery, applied mathematics.
Web: www.iac.cnr.it/~pontrell/
H-index (Google scholar): 32.

Scientific activity, membership and appointments:
- CNR Research projects leader (1998-2010).
- Scientific coordinator of the italian CNR unit of ERCIM working group IM2IM: Informatics and mathematics applied to interventional medicine.
- Participant to the EC Project RTN: Mathematical Modelling for Haemodynamics (HaeMOdel), coord. A. Quarteroni, 2002-2006.
- Participant to the EC project STREP: Integrated microfluidic bench technologies for active control of unconventional fluid by functionalised material interface of complex geometry microchannels (INFLUS), coord. D'Appolonia, 2006-2008.
- Partecipant to the italian flagship project Interomics (coord. L. Milanesi, 2012-2015).
- Scientific leader of a bilateral project Italy-Portugal (CNR-FCT): Multiscale analysis and numerical simulation of mathematical models in hemodynamics and hemorheology (2007–2010) and Novel mathematical modelling for drug delivery enhanced by electrical fields (2015–2016).
- Participant to the ERC Starting Grant Project NANOJETS, PI. D. Pisignano, 2013-2016.
- Participant to the ERC advanced Grant Project COPMAT, PI. S. Succi, 2017-2022.
- Member of the scientific committees of international conferences.
- Member of Italian societies SIMAI and INDAM (GNCS).

Editorial activity:
- Editor of the book: Wall-fluid interactions in physiological flows, Adv. Comp. Bioeng., 6, WIT Press, 2004.
- Editor of the book: Modelling in Medicine and Biology VI, WIT Trans. Biomed. Health, 8, WIT Press, 2005.
- Member of editorial board: Mathematical Biosciences (Elsevier), Special Topics Reviews in Porous Media: An International Journal, of Porous media (Begell House), Computational and mathematical methods in medicine (Hindawi).

Grants and visiting positions:
- CNR grant at Centrum Wiskunde en Informatica of Amsterdam (1987).
- Visitor at INRIA-REO Rocquencourt (France), CNR Short-Term Mobility program (2004).
- Visitor at IMA, University of Minneapolis (USA) (2006).
- Visitor at University of Tokyo during the 2nd JSIAM-SIMAI joint conference, Kobe (Japan) (2000).
- Visitor at CEMAT- IST (Lisbon, Portugal), CNR Short-Term Mobility program (2007–2010).
- Visitor at Univ. Hallam Sheffield (UK) (2009–2012).
- Visitor at Univ. Strathclyde, Glasgow (UK), CNR Short-Term Mobility program: Advanced modelling for release in drug-eluting stents (2014).
- Invited professor at "Mathematics for industry modelling week" at Glasgow University (12-16 Sept. 2016), ECOST-TRAINING SCHOOL-TD1409- 120916-078284.
- Visitor at IMPA (Istituto Nacional de Matematica Pura e Aplicada) Rio di Janeiro, Aug. 25 - Sept. 2, 2016.
- Visitor at Glasgow University, Sept. 16-24 2016 & Oct.4-20 2017, COST STSM TD 1409– MINET.
- Participation project PRIN (2017: Mathematics of active materials: from mechabiology to smart devices), P.I. L. Preziosi, 2018-2022.
- Participation project COPMAT, ERC Advanced Grant 2016 (N. 739964), P.I. S. Succi, 2018-2023 (www.copmat.eu)
- Italian responsible bilateral project CNR-Royal Society (UK): Computational modelling and experimental validation of the drug delivery from multifunctional nanoparticles for cancer treatment (P. Gentile, Newcastle Univ., UK- G. Pontrelli, CNR,Italy), 2021-2023.

Others:
- Author of more than 90 papers in international journals, invited speaker in international conferences.
- Organizer of minisymposia in international conferences.
- Consultant and reviewer of international journals in applied mathematics and for European research projects.
- Teaching master and PhD courses at University of L'Aquila, University of Rome III, University of Rome "La Sapienza" .
- Supervisor of master and PhD theses, trainer of young researchers and students.
- Teaching accreditation by Italian Department of Education (Computational and Applied Mathematics, 2018-2024).

List of selected publications (from 2018)

1. E. Di Costanzo, A. Giacomello, E. Messina, R. Natalini, G. Pontrelli, F. Rossi, R. Smits, M. Twarogowska, A discrete in continuous mathematical model of cardiac progenitor cells formation and growth as spheroid clusters (cardiospheres), Math. Med. & Biol., vol. 35, 1, pp. 121–144, 2018.
2. B. Kaoui, M. Lauricella, G. Pontrelli, Mechanistic modelling of drug release from multi-layer capsules, Comp. Biol. Med., vol. 93, pp. 149–157, 2018.
3. M. Lauricella, S. Melchionna, A. Montessori, D. Pisignano, G. Pontrelli, S. Succi, Entropic lattice Boltzmann model for charged leaky dielectric multiphase fluids in electrified jets, Phys. Rev. E, vol. 97, 033308, 2018.
4. E. Di Costanzo, A.I. Barakat, G. Pontrelli, Effect of flow on ATP/ADP concentration at endothelial

cell surface: interplay between shear stress and mass transport, Z. Angew. Math. Mech., on line, 2018.
5. E.J. Carr, G. Pontrelli, Modelling mass diffusion for a multi-layer sphere immersed in a semi-infinite medium: application to drug delivery, Math. Biosci., vol 303, pp.1-9, 2018.
6. R. Du, Y. Wang, S. McGinty, G. Pontrelli, G. Wang et. al, Design and testing of hydrophobic core/ hydrophilic shell nano/micro particles for drug-eluting stent coating, NPG Asia materials 10, pp. 642–658, 2018.
7. C.M. McKittrick, G. Pontrelli, S. McGinty et al., Combining mathematical modelling with in vitro experiments to predict in vivo drug-eluting stent performance, J. Contr. Release, vol. 303, 151-161, 2019.
8. Y. Wang, K. Zhang, G. Pontrelli et al., Biomimetic nanotherapies: red blood cell based core-shell structured nanocomplexes for atherosclerosis management, Advanced Science, 1900172, 2019.
9. E.J. Carr, G. Pontrelli, Drug delivery from microcapsules: how can we estimate the release time?, Mathematical Biosciences 315, 108216, 2019.
10. M. Meere, G. Pontrelli, S. McGinty, Modelling phase separation in amorphous solid dispersions, Acta Biomaterialia 94, pp. 410–424, 2019.
11. Y. Yin, J. Wang, M. Yang, R. Du, G. Pontrelli, et al. Penetration of the blood-brain barrier and the anti-tumour effect of a novel PLGA-lysoGM1/DOX micelle drug delivery system, Nanoscale, vol. 12, pp. 2946–2960, 2020.
12. G. Pontrelli, E.J. Carr, A. Tiribocchi, S. Succi, Modelling drug delivery from multiple emulsions, Phys. Rev. E., 102, 023114, 2020.
13. G. Pontrelli, O. Farago, A Langevin dynamics approach for multi-layer mass transfer problems, Comp. Biol & Med., vol 124, 103932, 2020.
14. Y.Wang, K. Zhang, T. Li, S. McGinty, G. Pontrelli et al., Macrophage membrane functionalized biomimetic nanoparticles for targeted anti-atherosclerosis applications, Theranostics, vol. 11 (1), pp. 164–180, 2021.
15. G. Pontrelli, G. Toniolo, S. McGinty, D. Peri, S. Succi, C. Chatgilialoglu, Mathematical modelling of drug delivery from pH-responsive nanocontainers, Comp. Biol & Med., vol 131, 104238, 2021.
16. A. Jain, S. McGinty, G. Pontrelli, L. Zhou, Theoretical model for diffusion-reaction based drug delivery from a multilayer spherical capsule, Int. J. Heat Mass Transf., vol. 183, 122072, 2022.
17. S. Becker, A.V. Kuznetsov, D. Zhao, F. de Monte, G. Pontrelli, Model of drug delivery to populations composed of two cell types, J. Theor. Biol., vol. 534, 110947, 2022.
18. A. Jain, S. McGinty, G. Pontrelli, Drug diffusion and release from a bioerodible spherical capsule, Int. J. Pharmaceutics, vol. 616, 121442, 2022.

Curriculum (in francese)

Ai sensi del D. L.gvo del 30 giugno 2003, n. 196 (Codice in materia di protezione dei dati personali), informato delle finalità del trattamento dei dati e della loro registrazione su supporti informatici, nonché dei soggetti responsabili dello stesso,

AUTORIZZO

con la trasmissione di questa scheda, UNINETTUNO Università Telematica nella figura del Rettore prof. Maria Amata Garito al trattamento dei dati personali contenuti in questo modulo per esclusive finalità didattiche e di ricerca al fine di consentire lo svolgimento dell'insegnamento e delle pratiche amministrative collegate.

ALLEGATO A: Scheda Biografica