



Avnesh Thakor

Assistant Professor of Radiology (Pediatric Radiology) at the Stanford University Medical Center

Radiology - Pediatric Radiology

CLINICAL OFFICES

- **Pediatric Radiology Clinic**

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

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Bio

BIO

CLINICAL FOCUS:

Interventional Radiology - Pediatric and Adult

ACADEMIC FOCUS:

Interventional Regenerative Medicine

Pancreatic Islet Transplantation

Interventional Oncology

Stem Cell Delivery

Nanotechnology

Novel Image guided Loco-regional Therapies

Ablative Technologies

Molecular Imaging

Over the past decade there has been tremendous advances in the field of Interventional Oncology with the clinical utilization of multiple new innovative locoregional therapies (i.e. chemoembolization, percutaneous ablation). Looking forward, our ability to superselectively deliver new therapies such as nanoparticles, stem cells and gene therapy will open new pathways for Interventional Radiology into the emerging field of Interventional Regenerative Medicine, as well as pancreatic islet transplantation

<http://med.stanford.edu/thakorlab.html>

CLINICAL FOCUS

- Diagnostic Radiology

ACADEMIC APPOINTMENTS

- Assistant Professor - Med Center Line, Radiology - Pediatric Radiology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Physician Scientist, Radiology, (2015- present)
- Assistant Professor, Radiology - Interventional (Pediatric and Adult), (2015- present)

HONORS AND AWARDS

- Society for Reproductive Investigation President's Presenter Award, Society for Reproductive Investigation (2007)
- NIHR Academic Clinical Fellowship, National Institute for Health Research (2008)
- PEEL Medical Research Trust Fellowship, PEEL Foundation (2008)
- American Cancer Society International Fellowship for Beginning Investigators (ACSBI), American Cancer Society (2009)
- British Institute of Radiology Philips Research Fellowship, British Institute of Radiology (2009)
- European Association for Cancer Travel Research Fellowship, European Association for Cancer Research (2009)
- Terumo Interventional Radiology Award, Terumo Medical Corporation (2012)
- Karol Slicher Cancer Research Fellowship, Royal College of Radiologists (2014)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, General Medical Council (UK) (2006 - present)
- Member (Fellow), Royal College of Radiologists (2012 - present)
- Member, Canadian Interventional Radiology Association (2014 - present)

PROFESSIONAL EDUCATION

- Board Certification: Diagnostic Radiology, Royal College of Radiologist (2012)
- BA, University of Cambridge , Physiology (2001)
- MA, University of Cambridge , Physiology (2005)
- MB BChir, University of Cambridge , Medicine (2006)
- PhD, University of Cambridge , Fetal Cardiovascular Physiology (2006)
- FHEA, Higher Education Academy , Teaching (2009)
- Fellowship: University of Toronto (2015) Canada
- MSc, University of London , Cancer Therapeutics (2010)
- FRCR(IR), Royal College of Radiologists , Radiology (Interventional Radiology sub-specialization) (2012)
- Fellowship: University Of British Columbia (2014) Canada
- MD, University of Cambridge/Stanford University , Molecular Imaging and Nanotechnology (2013)

- Residency: University of Cambridge School of Clinical Medicine (2013) England
- Internship: University of Cambridge School of Clinical Medicine (2008) England
- Fellowship, University of Cambridge - Addenbrookes Hospital , Adult Interventional Radiology (2013)
- Medical Education: University of Cambridge School of Clinical Medicine (2006) England
- Fellowship, University of British Columbia - Vancouver General Hospital , Adult Interventional Radiology (2014)
- Fellowship, University of Toronto - SickKids Hospital , Pediatric Interventional Radiology (2015)

LINKS

- Thakor Lab: <http://med.stanford.edu/thakorlab.html>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Thakor is an Assistant Professor in Interventional Radiology and a Clinician Scientist at Stanford University. His research interests are focused primarily on the pancreas, with respect to regenerative medicine and oncology.

Our Laboratory's research focuses on 3 fundamental areas:

1.The pancreas: We undertake research related to diabetes (i.e. # cell regeneration using mesenchymal stem cells, islet cell transplantation and the construction of novel "active" bioscaffolds for islet transplantation) and pancreatic cancer (i.e. the development of novel intra-arterial delivery techniques to the pancreas and the synthesis of theranostic nanoparticle platforms).

2.The Kidney: We are evaluating the effects of mesenchymal stem cells and pulsed focused ultrasound for regenerating the kidney in the setting of acute renal failure, chronic renal failure and renal transplantation.

3.Fetal Development: In complicated pregnancies, such as those affected by challenges which include low oxygen (i.e. hypoxia) and undernutrition, we are examining the adverse effects related to pancreatic and fetal development and strategies which can ameliorate any deleterious programming of these organs.

Additionally, the Thakor Lab has interests in the development of new technologies which can offer "Precision Health" and early detection of diseases using smart catheters and real-time biosensors

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Marta Garcia Contreras, Rosita Primavera, Ganesh Swaminathan

Publications

PUBLICATIONS

- **Percutaneous autologous pancreatic islet cell transplantation for traumatic pancreatic injury.** *journal of clinical endocrinology & metabolism*
Thakor, A. S., Sangha, B. S., Ho, S. G., Warnock, G. L., Meloche, M., Liu, D. M.
2015; 100 (4): 1230-1233

- **Nanooncology: The Future of Cancer Diagnosis and Therapy** *CA-A CANCER JOURNAL FOR CLINICIANS*
Thakor, A. S., Gambhir, S. S.
2013; 63 (6): 395-418
- **Gold Nanoparticles: A Revival in Precious Metal Administration to Patients** *NANO LETTERS*
Thakor, A. S., Jokerst, J., Zavaleta, C., Massoud, T. F., Gambhir, S. S.
2011; 11 (10): 4029-4036
- **The Fate and Toxicity of Raman-Active Silica-Gold Nanoparticles in Mice** *SCIENCE TRANSLATIONAL MEDICINE*
Thakor, A. S., Luong, R., Paulmurugan, R., Lin, F. I., Kempen, P., Zavaleta, C., Chu, P., Massoud, T. F., Sinclair, R., Gambhir, S. S.
2011; 3 (79)
- **Oxidative Stress Mediates the Effects of Raman-Active Gold Nanoparticles in Human Cells** *SMALL*
Thakor, A. S., Paulmurugan, R., Kempen, P., Zavaleta, C., Sinclair, R., Massoud, T. F., Gambhir, S. S.
2011; 7 (1): 126-136
- **Melatonin and vitamin C increase umbilical blood flow via nitric oxide-dependent mechanisms** *JOURNAL OF PINEAL RESEARCH*
Thakor, A. S., Herrera, E. A., Seron-Ferre, M., Giussani, D. A.
2010; 49 (4): 399-406
- **Redox modulation of the fetal cardiovascular defence to hypoxaemia** *JOURNAL OF PHYSIOLOGY-LONDON*
Thakor, A. S., Richter, H. G., Kane, A. D., Dunster, C., Kelly, F. J., Poston, L., Giussani, D. A.
2010; 588 (21): 4235-4247
- **Role of nitric oxide in mediating in vivo vascular responses to calcitonin gene-related peptide in essential and peripheral circulations in the fetus** *CIRCULATION*
Thakor, A. S., Giussani, D. A.
2005; 112 (16): 2510-2516
- **Emerging role of stem cell-derived extravesicular microRNAs in age-associated human diseases and in different therapies of longevity.** *Ageing Research Reviews*
Ullah, M., Ng, N. N., Concepcion, W., Thakor, A. S.
2020
- **Mesenchymal stem cells confer chemoresistance in breast cancer via a CD9 dependent mechanism** *Oncotarget*
Ullah, M., Akbar, A., Ng, N. N., Concepcion, W., Thakor, A. S.
2019; 10 (37): 3435-3450
- **Use of Blood Pool Agents With Steady-State MRI to Assess the Vascular System** *JOURNAL OF MAGNETIC RESONANCE IMAGING*
Thakor, A. S., Chung, J., Patel, P., Chan, A., Ahmed, A., McNeil, G., Liu, D. M., Forster, B., Klass, D.
2017; 45 (6): 1559-1572
- **Stereotactic body radiotherapy for pediatric hepatocellular carcinoma with central biliary obstruction** *PEDIATRIC BLOOD & CANCER*
Hiniker, S. M., Rangaswami, A., Lungren, M. P., Thakor, A. S., Concepcion, W., Balazy, K. E., Kovalchuk, N., Donaldson, S. S.
2017; 64 (6)
- **Transradial Access for Interventional Radiology: Single-Centre Procedural and Clinical Outcome Analysis.** *Canadian Association of Radiologists journal = Journal l'Association canadienne des radiologistes*
Thakor, A. S., Alshammari, M. T., Liu, D. M., Chung, J., Ho, S. G., Legiehn, G. M., Machan, L., Fischman, A. M., Patel, R. S., Klass, D.
2017
- **Clinically Approved Nanoparticle Imaging Agents.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*
Thakor, A. S., Jokerst, J. V., Ghanouni, P., Campbell, J., Mitra, E., Gambhir, S. S.
2016
- **MR cone-beam CT fusion image overlay for fluoroscopically guided percutaneous biopsies in pediatric patients** *PEDIATRIC RADIOLOGY*
Thakor, A. S., Patel, P. A., Gu, R., Rea, V., Amaral, J., Connolly, B. L.
2016; 46 (3): 407-412
- **Fetal in vivo continuous cardiovascular function during chronic hypoxia.** *journal of physiology*

- Allison, B. J., Brain, K. L., Niu, Y., Kane, A. D., Herrera, E. A., Thakor, A. S., Botting, K. J., Cross, C. M., Itani, N., Skeffington, K. L., Beck, C., Giussani, D. A. 2016; 594 (5): 1247-1264
- **Melatonin modulates the fetal cardiovascular defense response to acute hypoxia** *JOURNAL OF PINEAL RESEARCH*
Thakor, A. S., Allison, B. J., Niu, Y., Botting, K. J., Seron-Ferre, M., Herrera, E. A., Giussani, D. A.
2015; 59 (1): 80-90
 - **Radiological Evaluation of Abdominal Endovascular Aortic Aneurysm Repair.** *Canadian Association of Radiologists journal = Journal l'Association canadienne des radiologistes*
Thakor, A. S., Tanner, J., Ong, S. J., Hughes-Roberts, Y., Ilyas, S., Cousins, C., See, T. C., Klass, D., Winterbottom, A. P.
2015; 66 (3): 277-290
 - **The Other Path-Think Radial.** *Canadian Association of Radiologists journal = Journal l'Association canadienne des radiologistes*
Thakor, A. S., Munk, P. L., Klass, D.
2015; 66 (3): 191-?
 - **Endovascular aneurysm repair (EVAR) follow-up imaging: the assessment and treatment of common postoperative complications.** *Clinical radiology*
Ilyas, S., Shaida, N., Thakor, A. S., Winterbottom, A., Cousins, C.
2015; 70 (2): 183-196
 - **The use of cone-beam CT in assisting percutaneous translumbar catheter placement into the inferior vena cava.** *Clinical radiology*
Thakor, A. S., Chung, J., Patel, R., Cormack, R., Legiehn, G., Klass, D.
2015; 70 (1): 21-24
 - **Y90 selective internal radiation therapy.** *Surgical oncology clinics of North America*
Lee, E. W., Thakor, A. S., Tafti, B. A., Liu, D. M.
2015; 24 (1): 167-185
 - **A review of conventional and drug-eluting chemoembolization in the treatment of colorectal liver metastases: principles and proof.** *Future oncology*
Liu, D. M., Thakor, A. S., Baerlocher, M., Alshammari, M. T., Lim, H., Kos, S., Kennedy, A. S., Wasan, H.
2015; 11 (9): 1421-1428
 - **Heart disease link to fetal hypoxia and oxidative stress.** *Advances in experimental medicine and biology*
Giussani, D. A., Niu, Y., Herrera, E. A., Richter, H. G., Camm, E. J., Thakor, A. S., Kane, A. D., Hansell, J. A., Brain, K. L., Skeffington, K. L., Itani, N., Wooding, F. B., Cross, et al
2014; 814: 77-87
 - **A scanning transmission electron microscopy approach to analyzing large volumes of tissue to detect nanoparticles.** *Microscopy and microanalysis*
Kempen, P. J., Thakor, A. S., Zavaleta, C., Gambhir, S. S., Sinclair, R.
2013; 19 (5): 1290-1297
 - **A role for xanthine oxidase in the control of fetal cardiovascular function in late gestation sheep** *JOURNAL OF PHYSIOLOGY-LONDON*
Herrera, E. A., Kane, A. D., Hansell, J. A., Thakor, A. S., Allison, B. J., Niu, Y., Giussani, D. A.
2012; 590 (8): 1825-1837
 - **Developmental Programming of Cardiovascular Dysfunction by Prenatal Hypoxia and Oxidative Stress** *PLOS ONE*
Giussani, D. A., Camm, E. J., Niu, Y., Richter, H. G., Blanco, C. E., Gottschalk, R., Blake, E. Z., Horder, K. A., Thakor, A. S., Hansell, J. A., Kane, A. D., Wooding, F. B., Cross, et al
2012; 7 (2)
 - **Preclinical Evaluation of Raman Nanoparticle Biodistribution for their Potential Use in Clinical Endoscopy Imaging** *SMALL*
Zavaleta, C. L., Hartman, K. B., Miao, Z., James, M. L., Kempen, P., Thakor, A. S., Nielsen, C. H., Sinclair, R., Cheng, Z., Gambhir, S. S.
2011; 7 (15): 2232-2240
 - **The radiation burden from increasingly complex endovascular aortic aneurysm repair.** *Insights into imaging*
Thakor, A. S., Winterbottom, A., Mercuri, M., Cousins, C., Gaunt, M. E.
2011; 2 (6): 699-704
 - **Allopurinol Reduces Oxidative Stress in the Ovine Fetal Cardiovascular System After Repeated Episodes of Ischemia-Reperfusion** *PEDIATRIC RESEARCH*

- Derks, J. B., Oudijk, M. A., Torrance, H. L., Rademaker, C. M., Benders, M. J., Rosen, K. G., Cindrova-Davies, T., Thakor, A. S., Visser, G. H., Burton, G. J., van Bel, F., Giussani, D. A.
2010; 68 (5): 374-380
- **The relation of S100beta and metabolic and endocrine responses to acute fetal hypoxemia.** *Frontiers in bioscience (Elite edition)*
Thakor, A. S., Gazzolo, D., Frulio, R., Giussani, D. A.
2010; 2: 59-67
 - **Factor V Leiden Mutation and Antiphospholipid Syndrome: Risk Factors for Atherosclerotic and Arterial Thromboembolic Disease** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Thakor, A. S., Shah, D., Miller, F., Gaunt, M. E.
2009; 20 (8): 1097-1098
 - **Toxic epidermal necrolysis and neutropaenia: Complications of omeprazole** *AUSTRALASIAN JOURNAL OF DERMATOLOGY*
Thakor, A. S., Burke, A., Handfield-Jones, S., Sinha, A., Palmer, M., Burns, A.
2009; 50 (3): 207-210
 - **Nitric Oxide Reduces Vagal Baroreflex Sensitivity in the Late Gestation Fetus** *PEDIATRIC RESEARCH*
Thakor, A. S., Giussani, D. A.
2009; 65 (3): 269-273
 - **Infective endocarditis from injecting heroin into a leg ulcer.** *BMJ case reports*
Thakor, A. S., Wijenaik, N.
2009; 2009
 - **Postpartum rupture of a splenic artery aneurysm presenting as disseminated intravascular coagulation** *INTERNATIONAL JOURNAL OF OBSTETRIC ANESTHESIA*
Sinha, A., Meldrum, D., Sinha, B., Thakor, A. S.
2009; 18 (1): 95-96
 - **Multiple inflammatory aneurysms: A rare complication of idiopathic inflammatory aortitis** *European Journal of Radiology*
Thakor, A. S., Hiemstra, T. F., Cousins, C., See, T. C.
2009; 70: e141-e144
 - **Effects of acute acidemia on the fetal cardiovascular defense to acute hypoxemia** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*
Thakor, A. S., Giussani, D. A.
2009; 296 (1): R90-R99
 - **Double superior vena cavae.** *BMJ case reports*
Thakor, A. S., Massoud, T.
2009; 2009
 - **A new effective non-invasive method of cooling patients with malignant hyperthermia** *ANAESTHESIA*
Thakor, A. S., Levy, N.
2008; 63 (11): 1266-1267
 - **Anaemia, weight loss, and round shadows in the lungs** *LANCET*
Thakor, A. S., Hiemstra, T. F., Jayne, D. R.
2008; 371 (9606): 88-88
 - **A rare life-threatening complication of an indwelling hemodialysis catheter** *KIDNEY INTERNATIONAL*
Thakor, A. S., Hiemstra, T. F., Bradley, J. R.
2008; 73 (2): 244-244
 - **Acute small bowel obstruction as a result of a Meckel's diverticulum encircling the terminal ileum: A case report.** *Journal of medical case reports*
Thakor, A. S., Liau, S. S., O'riordan, D. C.
2007; 1: 8-?
 - **Comments on Point-Counterpoint "Positive effects of intermittent hypoxia (live high:train low) on exercise performance are/are not mediated primarily by augmented red cell volume".** *Journal of applied physiology*

Giussani, D. A., Thakor, A. S.
2006; 100 (1): 363-364

- **The role of calcitonin gene-related peptide in the in vivo pituitary-adrenocortical response to acute hypoxemia in the late-gestation sheep fetus** *ENDOCRINOLOGY*
Thakor, A. S., Giussani, D. A.
2005; 146 (11): 4871-4877
- **Acute hypoxia increases S100 beta protein in association with blood flow redistribution away from peripheral circulations in fetal sheep** *PEDIATRIC RESEARCH*
Giussani, D. A., Thakor, A. S., Frulio, R., Gazzolo, D.
2005; 58 (2): 179-184
- **Calcitonin gene-related peptide antagonism attenuates the haemodynamic and glycaemic responses to acute hypoxaemia in the late gestation sheep fetus** *JOURNAL OF PHYSIOLOGY-LONDON*
Thakor, A. S., Bloomfield, M. R., Patterson, M., Giussani, D. A.
2005; 566 (2): 587-597
- **Calcitonin gene-related peptide contributes to the umbilical haemodynamic defence response to acute hypoxaemia** *JOURNAL OF PHYSIOLOGY-LONDON*
Thakor, A. S., Giussani, D. A.
2005; 563 (1): 309-317
- **Effects of prolonged reduction in blood flow on submandibular secretory function in anesthetized sheep** *JOURNAL OF APPLIED PHYSIOLOGY*
Thakor, A. S., Brown, C. N., Edwards, A. V.
2003; 95 (2): 751-757
- **Effects of prolonged reduction in blood flow on submandibular secretory function in anaesthetized sheep** *Journal of Applied Physiology*
Thakor, A. S., Brown, C. N., Edwards, A. V.
2003; 95: 751-757