**Department of Radiology**

**Annual Faculty Activity Report**

**for the Period of July 1, 2012 – June 30, 2013**

**Faculty Name: \_\_\_Nick Tustison\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Purpose: The Annual Faculty Review is used as an opportunity to celebrate faculty successes, develop mechanisms for continued success, and provide guidance and feedback for professional advancement.**

**SECTION I: SCHOLARLY AND ADMINISTRATIVE ACTIVITIES**

1. **Bibliography**
   1. **Peer Reviewed Papers/Publications and Impact Factor (the past year only)**

* **Tustison NJ**, Avants BB, Cook PA, Kim J, Whyte J, Gee JC, Stone JR: Logical Circularity in Voxel-Based Analysis: normalization strategy may induce statistical bias, Human Brain Mapping, in press. Cited 0 times; IF = 5.880; Rank 2 out of 14 neuroimaging, 28 out of 244 neurosciences, 4 out of 116 radiology (nuclear medicine and medical imaging).
* Song G, Barbosa JR EM, **Tustison NJ**, Gefter WB, Kreider M, Gee JC, Torigian DA: A Comparative Study of HRCT Image Metrics and PFT Values for Characterization of ILD and COPD, Academic Radiology, 19(7):857–64, July 2012. Cited 2 times; IF = 1.692; Rank 57 out of 116 radiology (nuclear medicine and medical imaging).
  1. **Non-Peer Reviewed Manuscripts (the past year only)**
* **Tustison NJ**, Contrella B, Altes TA, Avants BB, de Lange EE, Mugler III JP: Voxel- based Longitudinal Analysis of Pulmonary Ventilation MRI, Journal of Magnetic Res- onance Imaging, *submitted*.
* Wintermark M, Huss DS, Shah B, **Tustison NJ**, Druzgal J, Kassell N, Elias JE: Diffusion Tensor Imaging Findings in MR-Guided Focused Ultrasound Treatment for Patients with Essential Tremor, *submitted***.**
* Said N, Elias JW, Raghavan P, Cupino A, **TustisonNJ**, Frysinger R, Patrie J, Xin W, Wintermark M: Diffusion tensor tractography compared to electric macro-stimulation to guide deep brain stimulator (dbs) placement for Parkinson’s disease, *submitted*.
  1. **Book Chapters**
  2. **Other Scholarly Activity (manuscript reviews, editorial boards, book reviews)**
* Program committee: Biomedical Applications, SPIE Medical Imaging 2013, Orlando, FL.
* Special guest topic editor, Neuroinformatics with the Insight Toolkit, Frontiers Neuroinformatics. http://www.frontiersin.org/Neuroinformatics/researchtopics/
* Frontiers Review Editorial Board May 2012–
* Reviews
  + Magnetic Resonance in Medicine
  + Journal of Magnetic Resonance in Imaging
  + Medical Image Analysis
  + MICCAI 2013
  + IPMI 2012
  + Frontiers Neuroscience

1. **Research**
   1. **Grants**
      1. **Active (Title, Dates, % Effort, Direct costs {current year}, Indirect costs {current year}); name of funding organization**

1R01HL109618-02 (JP Mugler) 7/1/2011 - 5/31/2016

NIH-NHLBI

Simultaneous Xe129 MRI of Regional Lung Ventilation and Gas Uptake in COPD

2R44 HL087550-04A1 (I Ruset) 9/1/2011–8/31/2014

Xemed, LLC/NIH-NHLBI

Regulatory Advancement of HXe as an MRI Contrast Agent

1R44 HL112397-01 (I Ruset) 12/1/2011 - 5/31/2015

Xemed, LLC/NIH-NHLBI

Single-session bronchial thermoplasty for severe asthmatics guided by Hxe MRI

HU0001-08-1-0001 (J Stone) 9/1/2012 - 2/28/2014

The Henry M. Jackson Foundation

Experienced Breacher Study

VX10-770-107 (TA Altes) 9/9/2010 - 9/8/2013

Vertex Pharmaceuticals, Inc.

A Phase II, Single-Blind, Placebo-Controlled Crossover Study to Evaluate the Effect of VX-770 on Hyperpolarized Helium-3 Magnetic Resonance Imaging in Subjects with Cystic Fibrosis, the G551D Mutation and FEV1 ≥40% Predicted.

* + 1. **Submitted (indicate priority score or date of review)**
  1. **Unfunded Research Efforts (Active)**
  2. **Cross-Grounds Collaboration (grants, papers, or other collaborations with faculty from other UVa schools)**
  3. **\_\_\_\_\_\_\_\_# of Patients Involved in Clinical Trials**
  4. **\_\_\_\_\_\_\_\_# of Investigator Initiated Clinical Trials**
  5. **\_\_\_\_\_\_\_\_# of Awarded Patents**
  6. **\_\_\_\_\_\_\_\_# of Submitted Patent Applications**
  7. **\_\_\_\_\_\_\_\_# of Disclosed Inventions**

1. **Presentations/Published Abstracts at Major and Scientific Meetings**
   1. **Peer Reviewed (the past year only)**

* Durst C, Raghavan P, Tustison N, Patrie, J, Cupino A, Xin W, Wintermark M. Mul- tiparametric Imaging Model to Accurately Predict Extent of Invasion of High-Grade Gliomas. ASNR Scientific Paper (Oral), 2013.
* Tustison NJ, Muratore A, Contrella B, Mugler III JP, de Lange EE, and Altes TA: In Proceedings of the 21st Voxelwise Comparison of Hyperpolarized He-3 and Xe-129 Lung Ventilation MR Imaging in Cystic Fibrosis. Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Salt Lake City, 2013.
* Tustison NJ, Avants BB, Cook PA, Song G, Das S, van Strien N, Stone JR, Gee JC: The ANTs Cortical Thickness Processing Pipeline. In: SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging. Orlando 2013.
* Tustison NJ, Contrella B, Altes TA, Avants BB, de Lange EE, Mugler III JP: Longi- tudinal assessment of treatment effects on pulmonary ventilation using 1H/3He MRI multivariate templates. In: SPIE Medical Imaging: Biomedical Applications in Molec- ular, Structural, and Functional Imaging. Orlando 2013.
* Tustison NJ, Avants BB, Cook PA, Gee JC, Stone JR: Statistical Bias in Optimized VBM. In: SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging. Orlando 2013.
* Tustison NJ, Avants BB: Diffeomorphic Directly Manipulated Free-Form Deformation Image Registration via Vector Field Flows. In: Proceedings of the Workshop on Biomedical Image Registration. Nashville 2012.
* Avants BB, Tustison NJ, Song G, Wu B, Stauffer M, McCormick MM, Johnson HJ, Gee JC, Insight Software Consortium: A Unified Image Registration Framework for ITK4. In: Proceedings of the Workshop on Biomedical Image Registration. Nashville 2012.
  1. **Invited Lectures, Visiting Professorships, Postgraduate Courses (specify and include both internal and external)**

**3. Faculty Participation in Development Programs (i.e. Leadership in Academic Matters – LAM; Promotion & Tenure Sessions, etc)**

**4. \_\_\_\_\_\_\_ # of CME Credits earned this fiscal year**

1. **Major Committee/Administrative Work/NIH Study Sections**
2. **Membership/participation on School of Medicine and UVa Committees**

* Radiology IT steering committee

1. **Faculty International and National Leadership and Recognition (participation on study sections, editorships, national societies, etc)**
2. **Other factors which you feel should be considered (i.e. research equipment consignments, undergraduate education)**

**SECTION II. PATIENT CARE ACTIVITIES**

1. **Expansion of clinical services for which you are responsible**
2. **New Programs**
3. **Current clinical responsibilities (% time)**

**SECTION III: TEACHING AND EDUCATIONAL ACTIVITIES (include Basic Science, Practice of Medicine, Clerkship, Physical Diagnosis/Tutorials)**

1. **Medical Students and/or Basic Science (lecture titles, course numbers, hours)**
2. **Residents/Fellows (lecture titles)**
3. **Other (technologists, nurses, industry, insurance companies, etc – include lecture titles)**
4. **Postgraduate (visiting fellowship – include lecture titles)**
5. **\_\_\_\_\_\_\_\_# of Pre-doctoral students mentored (lecture titles)**
6. **\_\_\_\_\_\_\_\_# of Doctoral/Post-doctoral Research students mentored (lecture titles)**
7. **\_\_\_\_\_\_\_\_\_# of Post-doctoral Fellows on training grants**
8. **\_\_\_\_\_\_\_\_\_# of Post-doctoral Fellows on funded fellowships**
9. **\_\_\_\_\_\_\_\_\_# of Post-doctoral Fellows on department funds**
10. **\_\_\_\_\_\_\_\_# of Post-doctoral Fellows in School of Medicine for more than 3 years**
11. **\_\_\_\_\_\_\_\_ Total # of Post-doctoral Fellows**
12. **\_\_\_\_\_\_\_\_# of MSTP (Medical Scientist Training Program) Students**
13. **Graduate students contact hours (mentorships, dissertation committees, etc)**
14. **New Courses/New Conferences (lecture titles, CME provided)**
15. **New Initiatives Developed**
16. **Other Contributions (i.e. miscellaneous activities that have enhanced the growth, improvement and visibility of the Department, such as volunteer work at the Free Clinic, collaborative efforts with tumor boards, work conference like Peds ICU rounds, etc). Be sure to list titles and frequency.**

**SECTION IV: RECOGNITION, HONORS AND AWARDS (include major and internal – i.e. positive comments and compliments from patients, staff, referring physicians, etc)**

1. **Major Recognition, Honors and Awards**
2. **Internal Recognition (i.e. letters of recognition from patients, referring physicians, etc)**

**SECTION V: LEAVE TIME AWAY FROM THE DEPARTMENT**

1. **\_\_\_\_\_\_ # of academic days assigned this fiscal year**
2. **\_\_\_\_\_\_ # of meeting/personal days used this fiscal year**
3. **\_\_\_\_\_\_ # of vacation days used this fiscal year**
4. **\_\_\_\_\_\_Total # of days away from the Department this fiscal year**

**SECTION VI: PERSONAL CAREER GOALS**

1. **Taking stock of your career and projecting a view into the future, what do you want to accomplish over the next one to three years? Five years?**

* 1 year
  + Win the MICCAI 2013 BRATS challenge in October.
  + Publish the following papers (within the year):
    - Stone’s breacher TBI paper
    - Lung/lobe segmentation paper (with Chengbo Wang)
    - ANTs cortical thickness paper (w/ James Stone)
    - ANTsR brain tumor segmentation (w/ Max Wintermark, Chris Durst)
    - B-spline SyN paper
  + Make significant progress with recent collaborations (Larry Borish, Patrice Rehm, Gerry Teague, and Jennifer Harvey)
* 5 years
  + It is really difficult to say at this point.

1. **How can the Department help you succeed in achieving these objectives?**

Nothing for the items listed in A.

1. **In the next year, what specific steps will you take toward realizing your goals?**

Itemwise:

* I am currently exceeding the performance levels of the winners for last year’s challenge.
* I finished my section and James is currently working on his portion.
* I am supervising a student for Chengbo Wang with whom I will work on the lung/lobe segmentation paper.
* The remaining papers are in the latter stages of being written and should be submitted before the end of the summer.
* Continue as I have done with other collaborators.

1. **What objective criteria will you use to monitor your progress over the next year?**

Competition outcome and paper publication are sufficiently concrete as to form their own criteria. With respect to the collaborators, I would like to get at least one abstract submitted with each of the new collaborations and potentially have a paper and/or grant in the works.

1. **In five years, how will you measure your success?**

It is really hard to say at this point.

1. **Additional comments?**

**SECTION VII. CURRICULUM VITAE - Please submit an updated CV when you submit your Faculty Activity Report. Please follow the School of Medicine P&T formatting. Reference website:** [**http://www.medicine.virginia.edu/administration/faculty/faculty-dev/pandt**](http://www.medicine.virginia.edu/administration/faculty/faculty-dev/pandt)

**See column “For Candidates” and labeled “CV Format (updated July 2010)”**

**SECTION VIII. COMMENTS FROM THE CHAIR**

**SECTION IX. ACKNOWLEDGMENT**

**This is your acknowledgment of having discussed your annual review and teaching evaluations with the Department Chair.**

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**Signature: Faculty Member Date of Review**

***(Leave blank until your meeting)***

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**Signature: Department Chair Date of Review**