

Curriculum Vitae

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Anna Marie Kenney, PhD

Office Address: Vanderbilt University Medical Center
Department of Neurological Surgery
T-4224 MCN
Nashville, TN 37232-2380
Phone: 615-936-3863
Fax: 615-343-8104
Email: Anna.m.kenney@vanderbilt.edu

Education:

1988-91 B.A. St. Mary's College of MD (Biology)
1991-98 PhD Yale University (Neuroscience)

Postdoctoral Training and Fellowship Appointments:

1998-2003 Post-doctoral Research in Pediatric Oncology, Dana-Farber Cancer Institute/Harvard Medical School

Military Service: None

Faculty Appointments:

2003-2005 Instructor in Pediatric Oncology, Dana-Farber Cancer Institute/Harvard Medical School
2005- Assistant Member, Cancer Biology and Genetics, Memorial Sloan-Kettering Cancer Center
2005- Assistant Professor, Cell Biology, Weill Cornell Medical College
2007- Assistant Professor, Neurobiology, Weill Cornell Medical College
2011- Associate Professor, Neurosurgery, Vanderbilt University

Hospital and Administrative Appointments: None

Specialty Certification: None

Licensures: None

Awards, Honors and Membership in Honorary Societies:

1988-1991 Full scholarship, Charlotte Brent Honors Program
1990-1991 University of Maryland undergraduate research fellowship
1991 Summa Cum Laude, St. Mary's College of Maryland
1999-2001 American Brain Tumor Association post-doctoral fellowship
2001-2003 The Medical Foundation, Inc. postdoctoral fellowship
2002 Dana-Farber Pediatric Oncology departmental award
2003-2007 The Sontag Foundation Distinguished Scientist award
2005 Phi Beta Kappa (St. Mary's College of Maryland chapter)
2006-present Handler Foundation award for new investigators at MSKCC
2006-2008 Alex's Lemonade Stand Foundation for Childhood Cancer Young Investigator Award
2007-2009 Children's Brain Tumor Foundation Award
2007-2008 Pediatric Brain Tumor Foundation Award
2008-2009 Childhood Brain Tumor Foundation of MD award
2009-2011 Alex's Lemonade Stand Innovation Award

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2009-2011 National Brain Tumor Society Award
2010-2013 James S. McDonnell Foundation 21st Century Science Initiative Award

Memberships in Professional and Scientific Organizations:

1993-present Society for Neuroscience
1998-present American Association for the Advancement of Science
1998-present American Association for Cancer Research
2003-present International Society for Stem Cell Research
2004-2005 Harvard Center for Neurodegeneration and Repair
2006-present Society for Neuro-oncology

Editorial Positions: None

Reviewer for Journals: Journal of Clinical Investigation
Genes and Development
Cancer Research
Development
Oncogene
Cell Death and Differentiation
PNAS
EMBO
Cancer Cell
Developmental Cell
Cerebellum

Grant Review/Study Sections:

Temporary member: NIH Neural Cell Fate Study Section, January 2009
Temporary member: NIH Cancer and molecular pathology study section, January 2010,
October 2010

Ad hoc grant reviewer for:
National Science Foundation

Scientific Advisory Boards: None

Academic Committees at Gerstner Sloan-Kettering (GSK)/Weill Cornell (WCMC):

2006-2009 WCMC Advancement to Candidacy exam committee
2010 Gerstner Sloan-Kettering admissions committee

Major Teaching Responsibilities for the Gerstner Sloan-Kettering and Weill Cornell BCMB and Neurobiology Graduate programs:

Lecturer, BCMP Molecular Genetics Course 2006-2009
Lecturer, GSK general course 2006-2010
Course director, Graduate Student Seminar series, 2009-2010
Focus group leader, GSK: "Signaling pathways and brain cancer" Fall 2009
Lunchtime lecturer, Neurobiology program 2006-1010
Interviewer, BCMP program 2006-2010
Interviewer, GSK program 2006-1010
Interviewer, WCMC MD/PhD program 2007-2008
First year mentor, GSK program 2008
Supervision of laboratory postdoctoral fellows, technicians and students.

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Mentor, NRSA post-doctoral fellow Susana Parathath 2006-2008
Mentor, ABTA post-doctoral fellow Bobby Bhatia 2006-the present
Mentor, Charles Revson Fdtn post-doctoral fellow Africa Fernandez-Lopez 2007-the present
Thesis Advisor, Lori Mainwaring 2006-the present
Thesis Committee Member, Neha Bhagwat (Ross Levine, mentor)
Thesis committee member, Sebastian Shaffer (Lorraine Gudas, mentor)
Thesis committee member, Elizaveta Petrova (Marilyn Resh, mentor)
Thesis committee member, Sara Kubek (Ingo Mellinshoff, mentor)

Local Lectures

Feb 2006 Rockefeller University Developmental Neurobiology (M.E. Hatten)
Jan 2007 WCMC Progress in Neuroscience Seminar (Stew Anderson)
April 2007 MSKCC Pediatrics Grand Rounds
Dec 2008 Stern College for Women (Marina Holz)
June 2009 Cold Spring Harbor Embryology Course Lecturer
June 2009 MSKCC Scientific Colloquium

Lectures by Invitation Last 5 years:

Jan 2006 Mayo Clinic Department of Biochemistry and Molecular Biology (C. Wetmore):
Sonic hedgehog and IGF cross talk in proliferating neural precursors.

April 2006 University of Vermont Neurobiology Series (R. Nishi): *Signaling pathways
regulating brain development and cancer.*

May 2006 National Institute of Aging (Ashani Weeraratna): *Signaling pathways regulating
brain development and cancer.*

Sept 2006 EMBO meeting: "Stemness: The bright and the dark side", invited speaker:
Mediators of Sonic hedgehog-regulated proliferation in brain development and cancer.

Feb 2007 Merck/IRBM, Rome Invited speaker: *Sonic hedgehog signaling interactions in the
developing brain and medulloblastoma.*

March 2007 St Mary's College of Maryland invited alumna seminar: *Cell growth and division
in the developing brain and pediatric brain cancer.*

Jan 2008 NINDS-sponsored meeting "mTOR signaling from cancer to CNS function" (Jane
Fountain): *mTOR pathway in Sonic hedgehog-driven neural precursor proliferation.*

Jan 2009 UC Davis (Paul Knoepfler): *Signaling pathways regulating cerebellar development
and medulloblastoma.*

March 2009 University of Calgary (Peter Forsyth): *Signaling pathways regulating cerebellar
development and medulloblastoma.*

Oct 2009 University of Delaware (Deni Galileo): *Signaling pathways regulating cerebellar
development and medulloblastoma.*

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- Nov 2009 Duke University (Rob Wechsler-Reya): *Signaling pathways regulating cerebellar development and medulloblastoma.*
- April 2010 Harvard/MGH Cancer Center invited seminar (Nabeel Bardeesy): *Interactions between proliferation-controlling pathways in the developing brain and medulloblastoma.*
- April 2010 Millenium, Inc (Keisuke Kuida): *Interactions between proliferation-controlling pathways in the developing brain and medulloblastoma.*
- April 2010 AACR meeting invited presenter, "Medulloblastoma: genetics and genomics" (M Roussel): *Interactions between proliferation-controlling pathways in the developing brain and medulloblastoma.*
- June 2010 UCSF neurosurgery grand rounds (M. Berger/C.D. James): *Interactions between proliferation-controlling pathways in the developing brain and medulloblastoma.*
- Oct 2010 UCSF Brain Cancer Symposium (R. Pieper): *Regulation of medulloblastoma recurrence by YAP1.*
- Nov 2010 MD Anderson Cancer Center (V. Gopalakrishnan): *Interactions between Sonic hedgehog mitogenic signaling and the Hippo pathway in cerebellar development and medulloblastoma.*

Organizing Roles in Scientific Meetings:

Scientific committee: EMBO meeting "Stemness: The bright and the dark side" September 19-22, 2006

Research Publications, peer reviewed (published or in press):

1. **Kenney AM** and Kocsis JD. Temporal variability of jun family transcription factor levels in peripherally or centrally transected adult rat dorsal root ganglia. *Molecular Brain Research* 52: 53-61. (1997)
2. **Kenney AM** and Kocsis JD. Timing of c-jun protein induction in lumbar dorsal root ganglia after sciatic nerve transection varies with lesion distance. *Brain Research* 751: 90-95. (1997)
3. Dib-Hajj SD, Black JA, Cummins TR, **Kenney AM**, Kocsis JD, and Waxman SG. Rescue of α -SNS sodium channel expression by *in vivo* administration of nerve growth factor. *Journal of Neurophysiology* 79(5): 2668-2676. (1998)
4. **Kenney AM** and Kocsis JD. Peripheral axotomy induces long-term JNK activation and AP-1 binding activity by c-Jun and junD in adult rat dorsal root ganglia in vivo. *Journal of Neuroscience* 18(4): 1318-1328. (1998)
5. **Kenney, AM** and Rowitch, DH. Sonic hedgehog promotes G₁ cyclin expression and sustained cell cycle progression in mammalian neuronal precursors. *Molecular and Cellular Biology* 20:9055-9067. (2000)
6. Zhao Q, Kho A, **Kenney AM**, Yuk D, Kohane I, and Rowitch DH. Identification of genes expressed with temporal-spatial restriction to developing cerebellar neuron precursors by a functional genomic approach. *PNAS* 99 (8): 5704-5709. (2002)
7. Ciemerych MA, **Kenney AM**, Sicinska E, Kalaszczynska I, Bronson RT, Rowitch DH, Gardner H, and Sicinski P. Development of mice expressing a single D-type cyclin. *Genes and Development*, 16:3277-89 (2002)

8. **Kenney, AM**, Cole MD, and Rowitch, DH. N-myc upregulation by Sonic hedgehog promotes proliferation in developing cerebellar granule neuron precursors. *Development* 130: 15-28. (2003)*
*Selected for "highlight" in *Nature Reviews Neuroscience* (January 2003): Nature Reviews Neuroscience 4, 8 (January 2003)
9. **Kenney, AM**, Widlund, HR, and Rowitch, DH. Hedgehog and PI-3 kinase signaling converge upon N-myc to promote cell cycle progression in cerebellar neuronal precursors. *Development* 131: 217-228 (2004).
10. Sjöström, S, Finn, G, Hahn WC, Rowitch, DH, and **Kenney, AM**. Cdk1 plays a prime role in regulating N-myc phosphorylation and turnover in neural precursors. *Developmental Cell* 9:327-338 (2005).
11. **Kenney, AM***, Browd SR*, Gottfried, ON, Pedone, CA, Fults, DW. N-myc substitutes for IGF signaling in a mouse model of Sonic hedgehog-induced medulloblastoma formation. *Cancer Research* 66: 2666-2672 (2006). * equal contribution
12. Hatton BA, Knoepfler PS, **Kenney AM**, Rowitch DH, de Alboran IM, Olson JM, Eisenman RN. N-myc is an essential downstream effector of Sonic hedgehog signaling during both normal and neoplastic cerebellar growth. *Cancer Research* 66: 8655-61 (2006).
13. Chesler L, Schlieve C, Goldenberg DD, **Kenney A**, Kim G, McMillan A, Matthay KK, Rowitch D, Weiss WA. Inhibition of phosphoinositol 3-kinase destabilizes MYCN protein and blocks malignant progression in neuroblastoma. *Cancer Research* 66: 8139-8146 (2006).
14. Becher OJ, Hambardzumyan D, Fomchenko E, Momota H, Mainwaring L, Bleau AM, Katz AM, Edgar M, **Kenney AM**, Cardon-Cardo C, Blasberg R, Holland EC. Gli activity correlates with grade in PDGF-induced gliomas. *Cancer Research* 68: 2241-9 (2008).
15. Parathath SR*, Mainwaring LA*, Fernandez-L A, Campbell DO, and **Kenney AM**. Insulin receptor substrate1 is an effector of Sonic hedgehog mitogenic signaling in cerebellar neural precursors. *Development* 135: 3291-3300 (2008). PMC2673703 *co-first authors
16. Otto T, Horn S, Brockmann M, Eilers U, Schuttrumpf L, Popov N, **Kenney AM**, Schulte JH, Beijersbergen R, Christiansen H, Berwanger B, Eilers M. Stabilization of N-myc is a critical function of Aurora A in human neuroblastoma. *Cancer Cell* 15: 67-78 (2009).
17. Northcott PA*, Fernandez-L A*. Hagan JP*, Ellison DW, Grajkowska W, Gillespie Y, Grundy R, Van Meter T, Rutka JT, Croce CM#, **Kenney AM#**, Taylor MD#. The miR-17/92 polycistron is up-regulated in Sonic hedgehog-driven medulloblastomas and induced by N-myc in Sonic hedgehog-treated cerebellar neural precursors. *Cancer Research* 69: 3249-3255 (2009). PMC2836891
*co-first authors; #co-corresponding authors
18. Bhatia B, Northcott PA, Hambardzumyan D, Govindarajan B, Brat DJ, Arbiser JA, Holland EC, **Kenney AM**. Tuberous sclerosis complex suppression in cerebellar development and medulloblastoma: separate regulation of mTOR activity and p27kip1 localization. *Cancer Research* 69: 7224-7234 (2009). PMC2745891
19. Fernandez-L A, Northcott PA, Dalton J, Fraga C, Ellison D, **Kenney AM**. YAP1 is amplified and up-regulated in hedgehog-associated medulloblastomas and mediates Sonic hedgehog-driven neural precursor proliferation. *Genes and Development*, 23: 2675-2692 (2009). PMC2788333
*Nature Reviews Cancer Research Highlight: Nature Reviews Cancer 10, 6 (January 2010)
20. Bhatia B, Malik A, Fernandez-L A, **Kenney AM**. P27kip1, a Double-edged sword in Shh-mediated medulloblastoma: tumor accelerator and suppressor. *Cell Cycle*, in press
21. Parathath S, Mainwaring LA, Fernandez-L A, Guldal CG, Nahle Z, **Kenney AM**. β -Arrestin-1 links mitogenic Sonic hedgehog signaling to the cell cycle exit machinery in neural precursors. *Cell Cycle* 9 (19) 2010.
22. Bhatia B, **Kenney AM**, Nahle Z. Mitogenic Sonic hedgehog signaling drives E2F1-dependent lipogenesis in cerebellar precursor cells and medulloblastoma. *Oncogene*, in press.

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23. Mainwaring, LA and **Kenney, AM**. Divergent functions for eIF4E and S6 kinase downstream of Sonic hedgehog mitogenic signaling in the developing cerebellum. *Oncogene*, in press.
24. Ellison, DW, Dalton, J, Kocak, M, Nicholson SL, Fraga C, Neale G, Kenney AM, Brat DJ, Perry A, Yong WH, Taylor RE, Bailey S, Clifford SC, Gilbertson RJ. Medulloblastoma: clinicopathological correlates of SHH, WNT, and non-SHH/WNT molecular subgroups.

In preparation/submitted

1. Requirement for p38MAPK activation in Sonic hedgehog-mediated mitogenic signaling. Cemille Guldal and Anna Kenney
2. HIF1 induction by Sonic hedgehog inhibits cerebellar precursor cell cycle exit. Cemille Guldal and Anna Kenney
3. YAP1 is required for central nervous system development. Amy Strayer, Jeff Wrana, and Anna Kenney
4. Oncogenic YAP1 drives medulloblastoma recurrence and aneuploidy through Akt-mediated survival and G2/M arrest over-ride. Africa Fernandez-L, Massimo Squatrito, Paul Northcott, Michael Taylor, Zaher Nahle, and Anna Kenney

Abstracts (2005-2010):

Oct 2006 EMBO meeting: "Hedgehog-Gli signaling in cancer and stem cells", short talk: *IRS1 is a node of hedgehog:IGF crosstalk in the developing cerebellum.*

Oct 2007 EMBO meeting: "Hematopoiesis and neurogenesis", short talk: *Insulin receptor substrate 1 is an essential node of mitogenic cross-talk between the Sonic hedgehog and Insulin-like growth factor signaling pathways in neural precursors.*

Nov 2007 Bobby Bhatia, Radhika Thiruvankatam, Lori A. Mainwaring, Jack L. Arbiser, Richard Gilbertson and Anna M. Kenney. *Increased mTOR Activity Alters Cerebellar Development and Cooperates with Sonic Hedgehog in Medulloblastoma Formation.* Society for Neuroscience annual meeting. (Poster, BB)

April 2008 AACR annual meeting, short talk: *Insulin receptor substrate 1 integrates Sonic hedgehog and IGF mitogenic signaling in cerebellar neural precursors.*

April 2008 Bobby Bhatia, Radhika Thiruvankatam, Paul A. Northcott, Baskaran Govindarajan, Daniel J Brat, Jack L. Arbiser, Andrej Dlugosz, Michael D. Taylor, Richard J. Gilbertson, and Anna M. Kenney. *Tuberous sclerosis complex suppression in cerebellar development and medulloblastoma: separate regulation of mTOR activity and p27^{Kip1} localization.* AACR annual meeting. (Poster, BB)

June 2008 Africa Fernandez-L and Anna Marie Kenney. *Function of IRS1 protein:protein interactions in Shh-induced proliferation of cerebellar granule precursors.* Hedgehog Signaling in development and disease. Stanford University, June 2008 (Poster, AF-L).

Oct 2008 Society for Neuro-oncology annual meeting short talk: *mTOR pathway in Sonic hedgehog-driven neural precursor proliferation.*

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- Oct 2008 Bobby Bhatia, Radhika Thiruvankatam, Jack L. Arbiser, Richard Gilbertson and Anna M. Kenney. *Effects of TSC2 Inactivation on Cerebellar Development and Medulloblastoma*. Society for Neuro-oncology annual meeting. (BB short talk)
- April 2009 Africa Fernandez-L, Stephane Angers and Anna Marie Kenney. *Sonic Hedgehog and Hippo pathway cross-talk in neural precursor proliferation and pediatric brain tumorigenesis*. AACR 100th Annual Meeting. (AF-L short talk).
- April 2009 Bobby Bhatia, David D. Liu, Andrew Koff, and Anna M. Kenney. *p27 (Kip1) gene dosage plays a role in cell cycle progression and tumor suppression in Shh-mediated medulloblastoma*. AACR annual meeting. (Poster, BB)
- June 2009 Bobby Bhatia, Radhika Thiruvankatam, Paul A. Northcott, Baskaran Govindarajan, Daniel J Brat, Jack L. Arbiser, Andrej Dlugosz, Michael D. Taylor, Richard J. Gilbertson, and Anna M. Kenney. *Tuberous sclerosis complex suppression in cerebellar development and medulloblastoma: separate regulation of mTOR activity and p27^{Kip1} localization*. Tuberous sclerosis alliance meeting. (Poster, BB)
- Sept 2009 AACR metabolism meeting short talk: *Differential regulation of the eIF4E and S6 kinase branches of the mTOR pathway downstream of mitogenic Sonic hedgehog signaling*.
- Oct 2009 SNO annual meeting short talk: *Sonic hedgehog: Hippo pathway crosstalk in neural precursor proliferation and brain tumorigenesis*.
- Oct 2009 PBTF retreat short talk: *Sonic hedgehog: Hippo pathway crosstalk in neural precursor proliferation and brain tumorigenesis*.
- Dec 2009 Africa Fernandez-L, Paul A. Northcott, James Dalton, Charles Fraga, David Ellison, Stephane Angers, Michael D. Taylor, and Anna Marie Kenney. *The Hippo pathway component YAP1 is amplified and upregulated in medulloblastomas and mediates Sonic hedgehog-driven neural precursor proliferation*. Genetics and Biology of Brain Cancers. AACR conference. (Poster, AF-L).
- Dec 2009 Bobby Bhatia, Arfa Malik, and Anna M. Kenney. *p27(Kip1) gene dosage plays a role in cell cycle progression and tumor suppression in Shh-mediated medulloblastoma*. Genetics and Biology of Brain Cancers. AACR conference. (Poster, BB).
- March 2010 EMBO meeting: "Hedgehog Signaling: from developmental biology to anticancer drugs", short talk: *Sonic hedgehog:Hippo pathway crosstalk in neural precursor proliferation and brain tumorigenesis*.
- April 2010 Fernandez-L, A; Northcott, PA; Dalton, J; Fraga, C; Ellison, D; Angers, S; Taylor, MD; Kenney, AM. *The Hippo pathway component YAP1 is amplified and upregulated in medulloblastomas and mediates radiation-resistance and Sonic hedgehog-driven neural precursor proliferation*. AACR 101th Annual Meeting. (Poster, AF-L)

Editorials, Reviews, Chapters:

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1. Lankford KL, **Kenney AM** and Kocsis JD. Cellular mechanisms regulating neurite initiation. *Progress in Brain Research* 108: 55-81. (1996)
2. **Kenney AM** and Rowitch DH. Regulation of early events in cell cycle progression by hedgehog signaling in CNS development and tumorigenesis. In press, for *Hedgehog Signaling in Development and Disease*, Ariel Ruiz I Altaba, ed.
3. **Kenney AM** and Segal RA. Subtracting the MATH: prominin-positive cerebellar stem cells in white matter. *Nature Neuroscience* 8:699-701 (2005)
4. Knoepfler, PK and **Kenney AM**. Neural precursor cycling at Sonic speed: N-Myc pedals, GSK-3 brakes. Invited review (AMK). *Cell Cycle* 5:47-52 (2006).
5. Fernandez-L A, Northcott PA, Taylor MD, and **Kenney AM**. Normal and oncogenic roles for microRNAs in the developing brain. Invited review (AMK). *Cell Cycle* 8: 4049-54 (2009)
6. Bhatia B, Nahle Z, and **Kenney AM**. Double trouble: when Sonic hedgehog signaling meets TSC inactivation. Invited review (AMK). *Cell Cycle*, 9: 456-459 (2010).
7. Fernandez-L A and **Kenney AM**. The Hippo in the room: A new look at a key pathway in cell growth and transformation. Invited review (AMK). *Cell Cycle* 9 (12) (2010).
8. Mainwaring LA, Bhatia B, and **Kenney AM**. Myc on my mind: a transcription factor family's essential role in brain development. Invited review (AMK). *Oncotarget*, in Press (2010).
9. Dubuc AM, Northcott PA, **Kenney AM**, and Taylor MD. Calculating a cure for cancer: managing medulloblastoma MATH1-ematically. *Expert Rev. Neurother.* 10: 1489-1492 (2010)

Alternative Media: None

Patents: None