

Abbreviated Biographical Information:
Dr. Andrew Arnold

Education:

Sc.B., Brown University
M.D., Harvard Medical School

Postdoctoral Training:

Intern and Resident in Internal Medicine, University of Chicago
Medical Staff Fellow (Molecular Oncology), Metabolism Branch, National Cancer Institute, NIH
Clinical and Research Fellow in Endocrinology, Massachusetts General Hospital

Past Appointments:

Assistant & Associate Professor of Medicine, Harvard Medical School
Chief, Laboratory of Endocrine Oncology, Massachusetts General Hospital

Current Appointments at University of Connecticut School of Medicine:

Murray-Heilig Chair in Molecular Medicine
Professor of Medicine, Professor of Genetics & Genome Sciences
Chief, Division of Endocrinology and Metabolism
Director, Center for Molecular Oncology and
Chief Academic Officer, Carole and Ray Neag Comprehensive Cancer Center
Director, Office of Physician-Scientist Career Development

Awards and Honors:

Elected to American Society for Clinical Investigation
Elected to Association of American Physicians
Fuller Albright Award, American Society for Bone and Mineral Research
Outstanding Investigator Award, American Federation for Medical Research
Outstanding Investigator Award, International Bone and Calcium Institute
Gerald D. Aurbach Award, The Endocrine Society
Louis V. Avioli Founder's Award, American Society for Bone and Mineral Research
Eli Lilly Award Lecture, Canadian Society of Endocrinology and Metabolism
Isadore Rosenberg Lecture, Tufts University School of Medicine
Elected Fellow, American Association for the Advancement of Science
Elected Member, American Clinical and Climatological Association
John Haddad Memorial Lecturer, University of Pennsylvania
Boy Frame Award for Excellence in Clinical Research, American Society for Bone and Mineral Research
International Medal, Society for Endocrinology, United Kingdom

Selected Publications:

Arnold A, Cossman J, Bakhshi A, Jaffe ES, Waldmann TA, Korsmeyer SJ. Immunoglobulin gene rearrangements as unique clonal markers in human lymphoid neoplasms. *N Engl J Med* 1983; 309:1593-9.

Arnold A, Staunton CE, Kim HG, Gaz RD, Kronenberg HM. Monoclonality and abnormal parathyroid hormone genes in parathyroid adenomas. *N Engl J Med* 1988; 318:658-62.

Arnold A, Kim HG, Gaz RD, Eddy RL, Fukushima Y, Byers MG, Shows TB, Kronenberg HM. Molecular cloning and chromosomal mapping of DNA rearranged with the parathyroid hormone gene in a parathyroid adenoma. *J Clin Invest* 1989; 83:2034-40.

- Arnold A, Horst SA, Gardella TJ, Baba H, Levine MA, Kronenberg HM. Mutation of the signal peptide-encoding region of the preproparathyroid hormone gene in familial isolated hypoparathyroidism. *J Clin Invest* 1990; 86:1084-7.
- Nussbaum SR, Gaz RD, Arnold A. Hypercalcemia and ectopic secretion of parathyroid hormone by an ovarian carcinoma with rearrangement of the gene for parathyroid hormone. *N Engl J Med* 1990; 323:1324-8.
- Motokura T, Bloom T, Kim HG, Jüppner H, Ruderman JV, Kronenberg HM, Arnold A. A novel cyclin encoded by a BCL1-linked candidate oncogene. *Nature* 1991; 350:512-5.
- Rosenberg CL, Wong E, Petty EM, Bale AE, Tsujimoto Y, Harris NL, Arnold A. PRAD1, a candidate BCL1 oncogene: mapping and expression in centrocytic lymphoma. *Proc Natl Acad Sci* 1991; 88:9638-42.
- Hinds PW, Mitnacht S, Dulic V, Arnold A, Reed SI, Weinberg RA. Regulation of retinoblastoma protein functions by ectopic expression of human cyclins. *Cell* 1992; 70:993-1006.
- Dowdy SF, Hinds PW, Louie K, Reed SI, Arnold A, Weinberg RA. Physical interaction of the retinoblastoma protein with human D cyclins. *Cell* 1993; 73:499-511.
- Motokura T, Arnold A. The PRAD1/cyclin D1 proto-oncogene: genomic organization, 5' DNA sequence, and sequence of a tumor-specific rearrangement breakpoint. *Genes Chromosomes Cancer* 1993; 7:89-95.
- Williams ME, Swerdlow SH, Rosenberg CL, Arnold A. Chromosome 11 translocation breakpoints at the PRAD1/cyclin D1 gene locus in centrocytic lymphoma. *Leukemia* 1993; 7:241-5.
- Cryns VL, Thor A, Xu H-J, Hu S-X, Wierman ME, Vickery AL, Benedict WF, Arnold A. Loss of the retinoblastoma tumor suppressor gene in parathyroid carcinoma. *N Engl J Med* 1994; 330:757-61.
- Hinds PW, Dowdy SF, Eaton EN, Arnold A, Weinberg RA. Function of a human cyclin gene as an oncogene. *Proc Natl Acad Sci USA* 1994; 91:709-13.
- Wang TC, Cardiff RD, Zukerberg L, Lees E, Arnold A, Schmidt EV. Mammary hyperplasia and carcinoma in MMTV-cyclin D1 transgenic mice. *Nature* 1994; 369:669-71.
- Arnold A, Brown MF, Ureña P, Gaz RD, Sarfati E, Drüeke TB. Monoclonality of parathyroid tumors in chronic renal failure and in primary parathyroid hyperplasia. *J Clin Invest* 1995; 95:2047-53.
- Tahara H, Smith AP, Gaz RD, Cryns VL, Arnold A. Genomic localization of novel candidate tumor suppressor gene loci in human parathyroid adenomas. *Cancer Res* 1996; 56:599-605.
- Chung DC, Smith AP, Louis DN, Graeme-Cook F, Warshaw AL, Arnold A. A novel pancreatic endocrine tumor suppressor gene locus on chromosome 3p with clinical prognostic implications. *J Clin Invest* 1997; 100:404-410.
- Palanisamy N, Imanishi Y, Rao PH, Tahara H, Chaganti RSK, Arnold A. Novel chromosomal abnormalities identified by comparative genomic hybridization in parathyroid adenomas. *J Clin Endocrinol Metab* 1998; 83:1766-70.
- Oyama T, Kashiwabara K, Yoshimoto K, Arnold A, Koerner F. Frequent overexpression of the cyclin D1 oncogene in invasive lobular carcinoma of the breast. *Cancer Res* 1998; 58:2876-80.

- Brown SB, Brierley TT, Palanisamy N, Salusky IB, Goodman W, Brandi ML, Drueke TB, Sarfati E, Urena P, Chaganti RSK, Pike JW, Arnold A. Vitamin D receptor as a candidate tumor suppressor gene in severe hyperparathyroidism of uremia. *J Clin Endocrinol Metab* 2000; 85:868-72.
- Imanishi Y, Hosokawa Y, Yoshimoto K, Schipani E, Mallya S, Papanikolaou A, Kifor O, Tokura T, Sablosky M, Ledgard F, Gronowicz G, Wang TC, Schmidt EV, Hall C, Brown EM, Bronson R, Arnold A. Primary hyperparathyroidism caused by parathyroid-targeted overexpression of cyclin D1 in transgenic mice. *J Clin Invest* 2001; 107:1093-1102.
- Imanishi Y, Tahara H, Palanisamy N, Spitalny S, Salusky IB, Goodman W, Brandi ML, Drueke T, Sarfati E, Urena P, Chaganti RSK, Arnold A. Clonal chromosomal defects in the molecular pathogenesis of refractory hyperparathyroidism of uremia. *J Am Soc Nephrol* 2002; 13:1490-8.
- Shattuck TM, Välimäki S, Obara T, Gaz RD, Clark OH, Shoback D, Wierman ME, Tojo K, Robbins CM, Carpten JD, Farnebo L-O, Larsson C, Arnold A. Somatic and germline mutations of the *HRPT2* gene in sporadic parathyroid carcinoma. *N Engl J Med* 2003; 349:1722-9.
- Shattuck TM, Westra WH, Ladenson PW, Arnold A. Independent clonal origins of distinct tumor foci in multifocal papillary thyroid carcinoma. *N Engl J Med* 2005; 352:2406-12.
- Mallya SM, Gallagher JJ, Wild YK, Kifor O, Costa-Guda J, Saucier K, Brown EM, Arnold A. Abnormal parathyroid cell proliferation precedes biochemical abnormalities in a mouse model of primary hyperparathyroidism. *Mol Endocrinol* 2005; 19:2603-9.
- Krebs LJ, Shattuck TM, Arnold A. *HRPT2* mutational analysis of typical sporadic parathyroid adenomas. *J Clin Endocrinol Metab* 2005; 90:5015-7.
- Lauter K, Arnold A. Analysis of *CYP27B1*, encoding 25-hydroxyvitamin D-1 α -hydroxylase, as a candidate tumor suppressor gene in primary and severe secondary/tertiary hyperparathyroidism. *J Bone Miner Res* 2009; 24:102-4.
- Bilezikian JP, Khan AA, Potts JT Jr, Arnold A, Brandi ML, Brown E, Bouillon R, Camacho P, Clark O, D'Amour P, Eastell R, Goltzman D, Hanley DA, Lewiecki EM, Marx S, Mosekilde L, Pasieka JL, Peacock M, Rao D, Reid IR, Rubin M, Shoback D, Silverberg S, Sturgeon C, Udelsman R, Young JE. Guidelines for the management of asymptomatic primary hyperparathyroidism: summary statement from the third international workshop. *J Clin Endocrinol Metab* 2009; 94:335-9.
- Eastell R, Arnold A, Brandi ML, Brown EM, D'Amour P, Hanley DA, Rao DS, Rubin MR, Goltzman D, Silverberg SJ, Marx SJ, Peacock M, Mosekilde L, Bouillon R, Lewiecki EM. Diagnosis of asymptomatic primary hyperparathyroidism: proceedings of the third international workshop. *J Clin Endocrinol Metab* 2009; 94:340-50.
- Mallya SM, Wu HI, Saria EA, Corrado KR, Arnold A. Tissue-specific regulatory regions of the *PTH* gene localized by novel chromosome 11 rearrangement breakpoints in a parathyroid adenoma. *J Bone Miner Res* 2010; 25:2330-6.
- Costa-Guda J, Marinoni I, Molatore S, Pellegata NS, Arnold A. Somatic mutation and germline sequence abnormalities in *CDKN1B*, encoding p27Kip1, in sporadic parathyroid adenomas. *J Clin Endocrinol Metab* 2011; 96:E701-6.
- Casimiro MC, Crosariol M, Loro E, Ertel A, Yu Z, Dampier W, Saria EA, Papanikolaou A, Stanek TJ, Li Z, Wang C, Fortina P, Addya S, Tozeren A, Knudsen ES, Arnold A, Pestell RG. ChIP-sequencing of cyclin D1 reveals a transcriptional role in chromosomal instability in mice. *J Clin Invest* 2012; 122:833-43.

- Costa-Guda J, Imanishi Y, Palanisamy N, Kawamata N, Koeffler P, Chaganti RSK, Arnold A. Allelic imbalance in sporadic parathyroid carcinoma and evidence for its *de novo* origins. *Endocrine* 2013; 44:489-95.
- Costa-Guda J, Soong C-P, Parekh VI, Agarwal SK, Arnold A. Germline and somatic mutations in cyclin-dependent kinase inhibitor genes CDKN1A, CDKN2B, and CDKN2C in sporadic parathyroid adenomas. *Horm Cancer* 2013; 4:301-7.
- Soong C-P, Arnold A. Recurrent ZFX mutations in human sporadic parathyroid adenomas. *Oncoscience* 2014; 1:360-6.
- Casimiro MC, Di Sante G, Crosariol M, Loro E, Dampier W, Ertel A, Yu Z, Saria EA, Papanikolaou A, Li Z, Wang C, Addya S, Lisanti MP, Fortina P, Cardiff RD, Tozeren A, Knudsen ES, Arnold A, Pestell RG. Kinase-independent role of cyclin D1 in chromosomal instability and mammary tumorigenesis. *Oncotarget* 2015; 6:8525-38.
- Corrado KR, Andrade SC, Bellizzi J, D'Souza-Li L, Arnold A. Polyclonality of parathyroid tumors in neonatal severe hyperparathyroidism. *J Bone Miner Res* 2015; 30:1797-802.
- Mallya SM, Corrado KR, Saria EA, Yuan FN, Tran HQ, Saucier K, Atti E, Tetradis S, Arnold A. Modeling vitamin D insufficiency and moderate deficiency in adult mice via dietary cholecalciferol restriction. *Endocr Res* 2016; 41:290-9.
- Pandya C, Uzilov AV, Bellizzi J, Lau CY, Moe AS, Strahl M, Hamou W, Newman LC, Fink MY, Antipin Y, Yu W, Stevenson M, Cavaco BM, Teh BT, Thakker RV, Morreau H, Schadt EE, Sebra R, Li SD, Arnold A, Chen R. Genomic profiling reveals mutational landscape in parathyroid carcinomas. *JCI Insight* 2017; 2:e92061.
- Wang H, Bender A, Wang P, Karakose E, Inabnet WB, Libutti SK, Arnold A, Lambertini L, Stang M, Chen H, Kasai Y, Mahajan M, Kinoshita Y, Fernandez-Ranvier G, Becker TC, Takane KK, Walker LA, Saul S, Chen R, Scott DK, Ferrer J, Antipin Y, Donovan M, Uzilov AV, Reva B, Schadt EE, Losic B, Argmann C, Stewart AF. Insights into beta cell regeneration for diabetes via integration of molecular landscapes in human insulinomas. *Nature Commun* 2018, in press. Published online 2017 Oct 3;8(1):767. doi: 10.1038/s41467-017-00992-9.