

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  
Elected Fellow of the American Society for Bone and Mineral Metabolism  
FIRMO Parathyroid Medal, Fondazione Italiana Ricerca sulle Malattie dell'Osso  
presented at the 16th International Workshop on Multiple Endocrine Neoplasia, Houston, TX  
William F. Neuman Award, American Society for Bone and Mineral Research

Selected Appointments/Service

National Council: American Society for Bone and Mineral Research; Association of Program Directors in  
Endocrinology & Metabolism; Association of Osteobiology  
Scientific Review Panels: NIH, Wellcome Trust, Keck Foundation  
Institutional Representative to the American Society for Clinical Investigation  
Major Editorships and Editorial Positions: *Journal of Clinical Endocrinology & Metabolism*; *Journal of the  
Endocrine Society*; *Endotext.org*; *Endocrine Reviews*, *Endocrinology*; *Clinical & Translational Science*;  
Endocrine Society – Annual Meeting Chair; Scientific and Educational Program Committee; Annual  
Meeting Steering Committee; Meetings and Educational Programs Committee; Publications Core Committee

American Society for Bone & Mineral Research – Annual Meeting Chair; Annual Meeting Program Committee; Publications Committee; Nominating Committee; Chair, Task Force on Young Investigator Awards; Development Committee; Professional Development Awards Work Group; Chair, Annual Meeting Young Investigator Award Workgroup  
 International Workshop on Multiple Endocrine Neoplasia, Parathyroid Carcinoma work group  
 International Workshop on Hypoparathyroidism and Primary Hyperparathyroidism, Genetics Task Force Chair, Biomedical Research and Health Care Technical Board, Connecticut Academy of Science and Engineering Executive and Steering Committees, UConn MD/PhD Combined Degree Program  
 Mentor: Young Innovative Investigator Program for underrepresented minority students; Group on Women in Medicine and Science, UConn School of Medicine

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, Mittnacht 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.
- 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.
- 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.
- 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.
- 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.
- 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.

- 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; 8:767.
- Riccardi A, Aspir T, Shen L, Kuo CL, Brown TC, Korah R, Murtha TD, Bellizzi J, Parham K, Carling T, Costa-Guda J, Arnold A. Analysis of activating GCM2 sequence variants in sporadic parathyroid adenomas. *J Clin Endocrinol Metab* 2019; 104:1948-52.
- Costa-Guda J, Corrado K, Bellizzi J, Romano R, Saria E, Saucier K, Rose M, Shah S, Alander C, Mallya S, Arnold A. CDK4/6 dependence of cyclin D1-driven parathyroid neoplasia in transgenic mice. *Endocrinology* 2020; 161:bqaa159.
- Arnold A, Dennison E, Kovacs CS, Mannstadt M, Rizzoli R, Brandi ML, Clarke B, Thakker RV. Hormonal regulation of biomineralization. *Nature Rev Endocrinol* 2021; 17:261-75.
- Vincze S, Peters NV, Kuo CL, Brown TC, Korah R, Murtha TD, Bellizzi J, Riccardi A, Parham K, Carling T, Costa-Guda J, Arnold A. GCM2 variants in familial and multiglandular primary hyperparathyroidism. *J Clin Endocrinol Metab* 2022; 107:e2021-6.
- Minisola S, Arnold A, Belaya Z, Brandi ML, Clarke BL, Hannan FM, Hofbauer LC, Insogna KL, Lacroix A, Liberman U, Palermo A, Pepe J, Rizzoli R, Wermers R, Thakker RV. Epidemiology, pathophysiology, and genetics of primary hyperparathyroidism (report of the International Workshop on Hypoparathyroidism and Primary Hyperparathyroidism). *J Bone Miner Res* 2022; 37:2315-2329.
- Costa-Guda J, Corrado K, Bellizzi J, Saria E, Saucier K, Guemes-Aragon M, Kakar G, Rose M, Pascal M, Alander C, Mallya SM, Arnold A. Influence of vitamin D deficiency on cyclin D1-induced parathyroid tumorigenesis. *Endocrinology* 2023; 164:bqad137.
- Costa-Guda J, Cohen ST, Romano R, Acostamadiedo J, Clark K, Bellizzi J, Arnold A. Phenotype of parathyroid-targeted *Cdc73* deletion in mice is strain-dependent. *J Endocr Soc* 2024; 8:1-5.