

KF SULLIVAN - CV

NAME AND CONTACT DETAILS

Kevin F. Sullivan, PhD
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CAREER PROFILE (Education and Employment)

EMPLOYMENT

2006-present	Professor of Cell Biology, Department of Biochemistry, National University of Ireland, Galway
1997- 2006	Associate Professor, Department of Cell Biology, The Scripps Research Institute, La Jolla, CA.
1991- 1997	Assistant Member, Department of Cell Biology, The Scripps Research Institute, La Jolla, CA.
1989-1991	Assistant Member, Department of Molecular Biology, Scripps Clinic and Research Foundation, La Jolla, CA.
1986-1989	Assistant Member, Keck Autoimmune Disease Center, Department of Basic and Clinical Research, Scripps Clinic and Research Foundation, La Jolla, CA.
1983-1986	Postdoctoral Research Fellow, Department of Biological Chemistry, The Johns Hopkins University School of Medicine, Baltimore, MD.

EDUCATION

1978	B.A. Pharmacology, University of California, Santa Barbara CA
1983	Ph.D. Biochemistry, University of California, Santa Barbara, CA

RESEARCH FUNDING

Funded as PI since 1987, including a long term NIH RO1 grant (GM39068, 1987-2006) that was last funded at approximately \$1.2M for the 5 year period ending in 2006 at The Scripps Research Institute.

Recent funding consists of the following:

COMPETITIVE FUNDING:

Grant: SFI 05/RP1/B793 – Assembly of centromeric chromatin.

Dates: 1 April, 2006 – 31 March 2012 (60 months +12 month NCE)

Total direct costs: €998,000

Delivered: 3 publications including one PloS biology high impact publication. 2 PhDs (N. Quinn 12/2011; A. Kaczmarczyk (03/2012); 1 postdoc alum now Marie Curie Fellow, Inst. Curie, Paris, 1 postdoc alum now sr. researcher in bioengineering grp, DCU. 3 international collaborations (Paris, Jena, Pavia).

Grant: SFI 05/RP1/B793 – Assembly of kinetochore associated chromatin.

Dates: 1 March, 2013 – 29 February 2016 (36 months)

Total direct costs: €300,000

Grant: IRCSET/Ulysses Travel: Analysis of kinetochore associated chromatin chaperones.

Partner: Genevieve Almouzni, Institute Curie, Paris, France

Dates: 2011

Total direct costs: €2,500. Travel to support experimental planning.

OTHER FUNDING

PhD studentships

Source: PRTL 5 Structured PhD programmes

Dates: 1 September 2011 – 31 August 2015

Total direct costs: €262,000

HISTORY OF MENTORING AND SUPERVISION

I have mentored 13 postdoctoral fellows, including three physician scientists. Six of these now hold academic positions, one an advance fellowship (Marie Curie) for further postdoctoral work, one is in a bioengineering research lab (DCU) and four are in various biotechnology industry positions. Three PhD students have been supervised, two since joining NUI Galway. In addition I have trained and mentored many collaborating scientists with whom I've worked directly over the years.

INNOVATION/COMMERCIALISATION ACTIVITY (e.g., relevant industry collaborations, invention disclosures, patents, spin-outs)

Patent No. 5,196,307: Cloned human centromere autoantigen. William Earnshaw and Don Cleveland, co-inventors. CENP-B protein expression system for autoimmune diagnosis.

Patent applied for: Antibody marker for mitotic cells. David Allis, co-inventor. Antibody against phosphorylated CENP-A for highly specific detection of mitotic cells by flow cytometric or histochemical methods.

Patent applied for: Sequence-specific DNA binding compounds to cross-link two gyres of nucleosomal DNA. Karolin Luger, co-inventor. A strategy for constructing chromatin-directed DNA binding compounds for chromatin research and therapeutics.

RESEARCH INTERESTS

My research interests have been primarily related to questions of how the cell establishes dynamic structural organization at a molecular level. In Ph.D. and postdoctoral work, I studied the properties of tubulin multigene families in vertebrates. In the departments of Molecular Biology and Cell Biology at the Scripps Research Institute my laboratory has focused on aspects of chromosome structure, heritability and control of mitosis. In addition, the laboratory has contributed pioneering approaches toward understanding nuclear and chromosome structure in living cells. The lab has made important contributions in application of fluorescence microscopy techniques for quantitative *in vivo* analysis of living processes, and has collaborated extensively with a number of groups in the implementation of these methods for probing molecular function in cells. In addition, he has edited two

important volumes on cell biological applications of fluorescent proteins. His current research is focused on the understanding how centromeres are established and maintained in human cells by dissecting the molecular and biochemical mechanism governing centromere assembly and heritability in the cell cycle. Regulation of chromosome function in the cell cycle through dynamic modification of chromatin and protein assembly processes is a major interest of the laboratory as is the mechanism by which cells regulate chromosome segregation in mitosis.

Specific major contributions by my laboratory have been:

Cloning and molecular identification of autoantigens (1986-1990); Molecular cloning of mammalian CENP-A and characterization of its structure/function organization (1990-2005); Pioneering development of GFP-based probes for chromosome biology (1995-2000); Identification of novel pathway for kinetochore-associated chromatin assembly (2006-present).

AWARDS AND HONOURS

National Science Foundation Predoctoral Fellow	1978-1981
NIH Postdoctoral Fellow, Award #GM09296	1983-1986
Johns Hopkins School of Medicine Award for Postdoctoral Research in Basic Science	1986
H.I. Dugan Arthritis Investigator, Arthritis Foundation	1987-1990
Chromosoma Prize	1992

PROFESSIONAL SOCIETIES: American Society for Cell Biology

EDITORIAL REVIEWER: Biochemistry, Cell, Chromosoma, Chromosome Research, J. Cell Science, Current Biology, Developmental Cell, EMBO Journal, Molecular Cell, Molecular and Cellular Biology, Molecular Biology of the Cell, J. Cell Biology, Nature Cell Biology, Science.

Selected Publications

Total Publications	Senior author publications		
62	51		
Research	Reviews	Chapters	Books
48	9	3	2

1. **Sullivan, K.F.** and **Cleveland, D.W.** (1984). Sequence of a highly divergent beta tubulin gene reveals regional heterogeneity in the beta tubulin polypeptide. *J. Cell Biol.* *99*, 1754-1760.
2. **Sullivan, K.F.** and **Cleveland, D.W.** (1986). Identification of conserved isotype-defining variable region sequences for four vertebrate beta tubulin polypeptide classes. *Proc. Natl. Acad. Sci. U. S. A.* *83*, 4327-4331.
3. **Earnshaw, W.C., Sullivan, K.F.,** Machlin, P.S., Cooke, C.A., Kaiser, D.A., Pollard, TD, Rothfield, N.F., and **Cleveland, D.W.** (1987). Molecular cloning of cDNA for CENP-B, the major human centromere autoantigen. *J. Cell Biol.* *104*, 817-829. **count as joint first author – would be joint in modern era**
4. Ben-Chetrit, E., Gandy, B.J., Tan, E.M., and **Sullivan, K.F.** (1989). Isolation and characterization of a cDNA clone encoding the 60-kD component of the human SS-A/Ro ribonucleoprotein autoantigen. *J. Clin. Invest.* *83*, 1284-1292.
5. Manns, M.P., Griffin, K.J., **Sullivan, K.F.,** and **Johnson, E.F.** (1991). LKM-1 autoantibodies recognize a short linear sequence in P450IID6, a cytochrome P-450 monooxygenase. *J. Clin. Invest.* *88*, 1370-1378. **co-PI**
6. **Sullivan, K.F.** and Glass, C.A. (1991). CENP-B is a highly conserved mammalian centromere protein with homology to the helix-loop-helix family of proteins. *Chromosoma* *100*, 360-370. **Chromosoma Prize**
7. **Sullivan, K.F.,** Hechenberger, M., and Masri, K. (1994). Human CENP-A contains a histone H3 related histone fold domain that is required for targeting to the centromere. *J. Cell Biol.* *127*, 581-592.
8. Shelby, R.D., Hahn, K.M. and **Sullivan, K.F.** (1996). Dynamic elastic behavior of a satellite DNA domains visualized *in situ* in living human cells. *J. Cell Biol.* *135*, 545-557
9. Shelby, R.D., Vafa, O., and **Sullivan, K.F.** (1997). Assembly of CENP-A into centromeric chromatin requires a cooperative array of nucleosomal DNA contact sites. *J. Cell Biol.* *136*, 501-513.
10. Vafa, O. and **Sullivan, K.F.** (1997). Chromatin containing CENP-A and α -satellite DNA is a major component of the inner kinetochore plate. *Curr. Biol.* *7*, 897-900.
11. Kanda, T., **Sullivan, K.F.,** and Wahl, G.M. (1998). Histone-GFP fusion protein enables sensitive analysis of chromosome dynamics in living mammalian cells. *Curr. Biol.* *8*, 377-385.
12. Shelby, R.D., Monier, K. and **Sullivan, K.F.** (2000) Chromatin assembly at kinetochores is uncoupled from DNA replication. *J. Cell Biol.* *151*, 1113-1118.
13. Zeitlin, S.G., Shelby, R.D. and **Sullivan, K.F.** (2001). CENP-A is phosphorylated by Aurora B kinase and plays an unexpected role in completion of cytokinesis. *J. Cell Biol.* *155*, 1147-1158.
14. Monier K, Mouradian S, **Sullivan KF.** (2007) DNA methylation promotes Aurora-B-driven phosphorylation of histone H3 in chromosomal subdomains. *J Cell Sci.* *120*, 101-114.
15. Prendergast L, van Vuuren C, Kaczmarczyk A, Doering V, Hellwig D, Quinn N, Hoischen C, Diekmann S, **Sullivan KF.** (2011) Premitotic assembly of human CENPs -T and -W switches centromeric chromatin to a mitotic state. *PLoS Biol* *9*, e1001082.
16. Dornblut C, Quinn N, Monajambashi S, Prendergast L, van Vuuren C, Münch S, Deng W, Leonhardt H, Cardoso MC, Hoischen C, Diekmann S, **Sullivan KF.** (2014) *Open Biology* *4*, 130229
17. Purgato S, Belloni E, Piras FM, Zoli M, Badiale C, Cerutti F, Mazzagatti A, Perini G, Della Valle G, Nergadze SG, **Sullivan KF,** Raimondi E, Rocchi M, Giulotto E. (2014) *Chromosoma* *124*, doi:[10. 1007/s00412-014-0493-6](https://doi.org/10.1007/s00412-014-0493-6) *epub ahead of print.*
18. **Sullivan, K.F.** (2001) A solid foundation: functional specialization of centromeric chromatin. *Curr. Op. Gen. Dev.* *11*, 182-188. **[Review]**
19. Cleveland DW, Mao Y, **Sullivan KF.** (2003) Centromeres and kinetochores: from epigenetics to mitotic checkpoint signaling. *Cell* *112*, 407-421. **[Review]**
20. Dobie, IM, Lowndes, NF and **Sullivan, KF** (2007) Fluorescent Proteins, in *Fluorescent Proteins*, Sullivan, KF, ed. *Methods in Cell Biology* *85*, Elsevier, New York **[Review]**