

Curriculum vitae

Name: Claudio Enrique Sunkel Cariola



Address: Instituto de Ciências Biomédicas de Abel Salzar
Largo do Prof. Abel Salazar nº 1
4000- Porto
Portugal

Address: Instituto de Biologia Molecular e Celular (IBMC)
Universidade do Porto
Laboratório de Genética Molecular
Rua do Campo Alegre 823
4150 Porto, Portugal
Phone: +351-22-6074900
Fax: +351-22-6099157
email: cesunkel@ibmc.up.pt

Nationality: Portugal
Date of birth: 15-05-1958
School: Santiago, Chile

University Studies:

- BSc in Biology, First class Honours, University of Sussex, UK. 1976-1979
- Ph.D. in Developmental Genetics, University of Sussex, UK. 1979-1983

Postdoctoral Research Positions:

- School of Biological Sciences, University of Sussex, UK. 1982-1983
- Departament of Neurobiology, Catholic University of Chile, Chile. 1983
- Department of Biochemistry, Imperial College, UK. 1983-1987

Honours:

- Science Research Council - Doctoral studentship (1979-1982)
- Nuffield Foundation - Postdoctoral Fellowship (1982-1983)

- Royal Society - Postdoctoral Fellowship (1983)
- Cancer Research Campaign - Postdoctoral Fellowship (1983 - 1987)
- FCT, Sabbatical Fellowship, University of California, Santa Cruz, USA (2001)

Independent Research and Teaching Positions:

- Research Fellow, University of Porto, Portugal, 1988-1992
- Head of the Molecular Genetics Laboratory, Centre for Experimental Cytology. 1988-2000
- Head of the Molecular Genetics Laboratory, IBMC, Portugal. From 2000.
- Associate Prof. Molecular Biology, ICBAS, University of Porto, from January 2000
- Full Prof. Molecular Biology, ICBAS, University of Porto, from June 2005

Teaching Positions:

- Invited Professor, Institute for Biomedical Sciences Abel Salazar 1992-1993
- Assistant Professor, Institute for Biomedical Sciences Abel Salazar, 1993-2000
- Associate Professor, Institute for Biomedical Sciences Abel Salazar, 2000-2005
- Full Professor, Institute for Biomedical Sciences Abel Salazar, June 2005.

Other nominations:

- Executive Director, Centro de Citologia Experimental, UP (1994-2000)
- Vice-Director, Institute for Molecular and Cellular Biology, University of Porto (2000-2009)
- Elected member of the European Molecular Biology Organisation in 2000.
- Member of National evaluation panel for Biology University courses, 2001.
- National delegate to EMBC/EMBO/EMBL (2005-2008)
- Member of Science and Society committee of EMBO (2005-2008)
- Molecules, Genes and cell Funding committee, Wellcome Trust, UK (2005-2008)
- Chairman of the Development Installation Grant program of the EMBC (2006-2007)
- National Coordinator for the evaluation of FCT research Units 2007-2008

Referee for the following Journals:

- Journal of Cell Science
- Nature Cell Biology
- Gene
- Current Biology
- Chromosome Research
- Developmental Biology
- EMBO reports
- Molecular Cell Biology
- Journal of Cell Biology
- The EMBO Journal

Evaluation of Projects to the following Grant agencies:

- Fundação para a Ciência a Tecnologia, Portugal
- FONDECYT, Chile
- FONCYT, Argentine
- German-Israeli Research Foundation, Germany
- National Science Foundation, USA

- Royal Society, UK
- Ministry for Education University and Research, Italy
- Medical Research Council, UK
- Wellcome Trust, UK
- CancerUK, UK

Areas of Research:

Genetic and molecular dissection of cell division using *Drosophila melanogaster* as a model system.

- General regulation of mitosis
- Chromosome structure
- The mitotic checkpoint
- Organisation and function of the mitotic apparatus

Main scientific contributions:

1. Identification, cloning and functional characterization in *Drosophila* of the first member of the POLO-kinases which has subsequently been shown to be one of the major regulators of mitosis and meiosis in all eukaryotic cells.
2. Genetic and functional Identification of the PR55 protein phosphatase regulatory subunit which is an essential enzyme that dephosphorylates Cdk1 phosphorylation substrates.
3. Identified the first mutation in a higher eukaryote of the γ -tubulin genes demonstrating for the first time that loss of the centrosomal microtubule organizing activity still allowed the formation of functional spindles.
4. Isolation and functional characterization of the condensin complex subunit SMC4 demonstrating for the first time that loss of the condensin complex does not lead to a breakdown of the overall structure of mitotic chromosomes and showing that condensin has an essential role in resolving sister chromatids.
5. Cloning and immunolocalization of endogenous cohesin during mitosis. Our antibodies remain one of the few that allow one to see cohesin in between sister chromatids during late metaphase.
6. Identification and functional characterization of the *Drosophila* and human members of the Mast/Orbit/CLASP family of MAPs involved in regulating addition of subunits to microtubules that are stably bound to kinetochores.
7. Identification, functional analysis and production of extensive biological reagents to study the spindle assembly checkpoint (SAC) protein Bub1, BubR1, Bub3, Mad2 and Mad1.
8. Demonstration that certain SAC components like BubR1 and Bub3 are essential for the life of the organism.
9. Demonstration that BubR1 is required during early embryogenesis to regulate cell division and to stop the remaining polar bodies from participating.
10. More recently we have shown that BubR1 regulates progression through meiosis and the stability of the synaptonemal complex and thus certain aspects of recombination during generation of gametes.

Management of research projects:

- “Cellular proliferation in Eukaryotes: Molecular analysis of mitotic genes” JNICT, SAU/16/90, 1990-1993.
- “Molecular characterization of the centromere in *DROSOPHILA MELANOGASTER*” JNICT/STRIDE SAU/268/92, 1993-1994.
- “GENES REQUIRED FOR PROGRESSION THROUGH MITOSIS” European Network Human Capital Mobility, 1993-1996.
- “Molecular organization of the nucleus during interphase and mitosis in Eukaryotic cells” PRAXIS XXI/SAU/2/2.2/06/94, 1994-1997.
- “MOLECULAR CLONING OF HUMAN ANTIGENS RECOGNISED BY MURINE SYSTEMIC LUPUS ERYTHEMATOSUS MONOCLONAL ANTIBODIES” JNICT PECS/P/SAU/122/95, 1996-1998.
- “RELATING MITOTIC CONTROL TO THE MECHANISMS OF CELL DIVISION” Coordinator of the Training and Mobility of Researchers Network of the European Union, 1996-2000.
- “Genetic and Molecular analysis of genes required for the organization and function of the mitotic spindle”, FCT, Portugal, November 2000 to October 2003.
- “Molecular analysis of genes required for the structure and segregation of chromosomes”. FCT, Portugal. October 2002 to September 2005. POCTI/BME/42359/2001
- “Mitosis and Cell division”, European Union, TMR network, October 2002 to April 2007.
- “Identification of molecular partners of the non-motor microtubule associated protein MAST”. FCT, Portugal, May 2003 to April 2006. POCTI/BCI/49176/2002
- Functional analysis of spindle checkpoint proteins during embryogenesis, FCT, Portugal, January 2005 to December 2007. POCI/BIA-BCM/56594/2004
- Molecular dissection of the Spindle assembly checkpoint in *Drosophila*, FCT, January 2008 to December 2010. PTDC/BIA-BCM/64224/2006
- “*Drosophila* as a model system”, FCT Program for new equipment 2004-2007.
- “Development of a Cell Analysis Facility”, FCT Program for new equipment 2004-2007.

Supervision of PhD students

1. Rui Gomes, Faculdade de Ciências, University of Lisbon (1994).
2. Maria do Carmo Avides Moreira, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 1995).

3. Elsa Bonze-da-Rocha, Department of Biochemistry, Faculty of Pharmacy, University of (awarded 1995).
4. Álvaro Augusto Marques Tavares, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 1997).
5. Paula Maria Coelho, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 1997).
6. Joana Maltez Perdigão, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 1997).
7. Paula Sampaio Fonseca, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 1998).
8. Maria Cristina Grácio Machado, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 1999)
9. João Almeida Santos, Instituto de Ciências Biomédicas de Abel Salazar, Universidade do Porto (awarded 1998).
10. Soren Steffensen, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 2001).
11. Elsa Logarinho, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 2001)
12. Joana Queiroz-Machado, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 2001)
13. Helder Maiato, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 2003).
14. Carla Lopes, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 2005).
15. Catarina Lemos, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 2005).
16. Tatiana Moutinho dos Santos, Institute of Biomedical Sciences Abel Salazar, University of Porto (awarded 2006).
17. Raquel Oliveira, Department of Biochemistry, University of Coimbra (awarded 2007).
18. Rita Reis, Institute of Biomedical Sciences Abel Salazar, University of Porto (In progress)
19. Bernardo Orr, Institute of Biomedical Sciences Abel Salazar, University of Porto (In progress).
20. Andre Maia, Institute of Biomedical Sciences Abel Salazar, University of Porto (In progress).
21. Aureliana Filipa Sousa, Institute of Biomedical Sciences Abel Salazar, University of Porto (In progress).

22. Torcato Martins, Institute of Biomedical Sciences Abel Salazar, University of Porto (In progress).

Invited seminars (since 2000)

1. Genetic and Molecular Analysis of Spindle Checkpoint Proteins in *Drosophila*. Jacques-Monod Conference "The Cell Division Cycle". Roscoff, France, April 29th to May 3rd 2000.
2. Genetic Analysis of Bub1 and Bub3, two Spindle Checkpoint Genes in *Drosophila*. Cell cycle in *Drosophila*. EMBL workshop, Cortona, Italia, Junho 2000.
3. Bub1 and Bub3 are required for normal mitotic progression in *Drosophila* neuroblasts. 42 Annual *Drosophila* Research Conference, Washington, USA. March 2001.
4. Polo-like kinases during mitotic progression. New targets for drug discovery satellite meeting, Marseille, France April 2001.
5. MAST, a new microtubule-associated protein required for spindle organisation and function. Pierre Fabre Research Centre, Castres, France, June 2001.
6. Genetic analysis of spindle checkpoint protein in *Drosophila*. 2001 FEBS meeting, Lisbon, July 2001.
7. The role of Bub1 and Bub3 in the regulation of the spindle checkpoint in *Drosophila*. Aneuploidy 2001, Chartres, France, July 2001.
8. The spindle-assembly checkpoint in *Drosophila* somatic cells. Department of Cell Biology, University of California, Santa Cruz, August 2001.
9. The role of non-motor microtubule-associate proteins in the organization and function of the mitotic apparatus. Department of Cell Biology, University of California, Santa Cruz, August 2001.
10. Mast: a conserved microtubule-associated protein required for spindle organisation and function during mitosis. European *Drosophila* Research Conference, Edinburgh, Scotland, September 2001.
11. Regulating mitotic progression in *Drosophila*. New Frontiers in Molecular Biology, EMBO meeting, Crete, Greece, October 2001.
12. The role of non-motor microtubule associated proteins during mitosis. EMBL, Heidelberg, Germany, October 2001.
13. Mast, a non-motor microtubule associated protein is required for spindle organization and function. 2nd Iberoamerican Cytoskeletal Forum, Valdivia, Chile, January 2002.
14. Genetic analysis of MAST function in *Drosophila*. CNRS, Toulouse, France, January, 2002.
15. The role of spindle checkpoint proteins Bub3 and BubR1 in *Drosophila*. 43 Annual *Drosophila* research Conference, San Diego, USA, April 2002.

16. The role of the microtubule associated protein MAST/CLASP1 in kinetochore spindle attachment. Plenary lecture, 14 Biochemistry Congress, Lisbon, Portugal, December 2002.
17. Regulating progression through mitosis, Universidade do Minho, Portugal, June 2003.
18. MAST/CLASP1: a non-motor microtubule associated protein involved in functional kinetochore attachment. Seminar at the Department of Genetics, University of Rome, La Sapienza, Italy. July 2003.
19. Kinetochore-microtubule attachment and the role of non-motor microtubule-associated proteins. The function of proteins. Luso-Spanish meeting, La Corunha, Spain. September 2004.
20. MAST/CLASP1 role in regulating microtubule dynamics at the kinetochore. Annual Meeting of the Chilean Society for Cell Biology. Main plenary lecture. Pucon, Chile, October 2003.
21. Kinetochore-microtubule interactions and the role of MAST/CLASP1. Centro de Investigaciones Oncologicas, Madrid, Spain, October 2003.
22. The spindle assembly checkpoint in Drosophila development, EMBO workshop on Molecular Biology of Drosophila, June 2004, Crete, Grece.
23. Mast is a GTP-binding MAP required for mitosis, 5th International Workshop on Chromosome Segregation and Aneuploidy, September 2004, Cortona, Italy.
24. The Kinetochore-microtubule interphase and the role of MAST/CLASP1, Universidad de Alicante, Centro de NeuroCiências, October 2004, Alicante, Spain.
25. The role of MAST/CLASP at the kinetochore-microtubule interphase, University of Sussex, October 2004, UK.
26. The role of the spindle checkpoint Bub3 in the regulation of mitotic progression, 45th Annual Drosophila Research Conference Washington, March, 2005.
27. The role of MAST/CLASP in kinetochore microtubule interaction. Universidade do Minho, Portugal, April 2005.
28. The role of spindle checkpoint proteins in regulating mitotic progression. MBO course on live microscopy, Instituto Gulbenkian de Ciência, Libon, Portugal, June 2005.
29. The spindle checkpoint: in vivo analysis of Drosophial S2 cells after depletion of Bub3, Bubr1 and Mad2. CNIO, Madrid, Spain, June 2005.
30. The spindle checkpoint: from cell division to embryonic development. Instituto de Biologia del Desarrollo, Universidade de Sevilla, Sevilla, Spain, June 2005.
31. MAST/CLASP: an essencial MAP required for mitosis. 19th European Drosophila Research Conference, Eger, Hungary, September, 2005.
32. Condensins: essential complexes required for chromosome segregation and maintenance of centromeric heterochromatin. Jacques-Monod Conference "Molecular machines in cell division". Roscoff, France, September 2005.

33. The spindle assembly checkpoint proteins: from somatic cells to early embryo development. University of Lueven, Belgium, November 2005.
34. Multiple roles of spindle checkpoint proteins. University of Toulouse, Toulouse, France, December 2005.
35. Spindle checkpoint proteins and regulation of mitotic progression, ITQB, Universidade Nova de Lisboa, Lisboa, Portugal, March 2006.
36. The spindle assembly checkpoint during mitosis. Department of Genetics, University of Bayreuth, Germany, March 2006.
37. Multiple roles of spindle checkpoint proteins in cell division. European Society of Human Genetics, May, Amsterdam, 2006.
38. The role of spindle assembly checkpoint proteins in mitosis and meiosis: from somatic cells to embryonic development. 31st FEBS congress Istanbul, June, 2006.
39. Mast: an essential regulator of microtubule dynamics, International course on confocal microscopy, University of Ribeirão Preto, São Paulo, Brazil, September 2006.
40. The spindle assembly checkpoint and regulation of chromosome segregation during mitosis, International course on confocal microscopy, University of Ribeirão Preto, São Paulo, Brazil, September 2006.
41. Regulation of chromosome segregation in mitosis and meiosis, Annual meeting of the Portuguese society for Microscopy, Braga, Portugal, December 2006.
42. Mad2 plays an essential role in regulating progression through mitosis. Genetic Society of America, 47th Annual Drosophila Research Conference, Philadelphia, USA, March 2007.
43. Multiple roles of spindle assembly checkpoint components: mitosis, meiosis and embryonic development. Rockefeller University, NY, USA, April 2007.
44. The spindle assembly checkpoint proteins: multiple functions during progression through mitosis, Department of Biology, University of Newcastle, UK, May, 2007.
45. The spindle assembly checkpoint: revisiting the roles of Mad2 and BubR1. Erasmus Medical Center, Rotterdam, Netherlands, June, 2007.
46. Multiple roles of spindle assembly checkpoint proteins during progression through mitosis. Netherlands Society of Cell and Developmental Biology, Utrecht, June 2007.
47. BubR1 is essential for proper chromosome segregation during meiosis in Drosophila, 3rd International Workshop on Chromosome Segregation and Aneuploidy, Naatali, Finland, June, 2007.
48. Spindle assembly checkpoint proteins during progression through mitosis and meiosis. HHIM/EMBO YIP meeting, Tallinn, Estonia, September, 2007.
49. The spindle assembly checkpoint proteins in mitosis and meiosis, Department of Genetics, University of Cambridge, October, 2007.
50. Monitoring chromosomes segregation in mitosis and meiosis, Leica confocal course, Medical School, University of São Paulo, Ribeirão Preto, Brasil, October, 2007.

51. The structure and organization of the mitotic chromosome, Leica confocal course, Medical School, University of São Paulo, Ribeirão Preto, Brasil, October, 2007.
52. Spindle checkpoint protein in mitosis and meiosis, Department of Genetics, University of Cambridge, Cambridge, UK, November 2007.
53. Kinetics of mitotic progression: the kinetochore and non-kinetochore roles of SAC proteins, University of Cornell, NY, USA, March, 2008.
54. The kinetochore and non-kinetochore roles of SAC proteins. Genetic Society of America, Annual Drosophila research Conference, San Diego, March 2008.
55. The structure of the mitotic chromosome: A dynamic scaffold ?, Department of Biochemistry, ETH, Zurich, Switzerland, April 2008.
56. Dual role of Topoisomerase II in centromere resolution and Aurora B activity. XIV Congress of the Brazilian Society for Cell Biology, São Paulo, Brasil, July 2008.

Organization of Conferences:

1. EMBO workshop, Polo like Kinases: From the fly to the clinic 20 years onwards. Ipanema Park Hotel, Porto, Portugal, September, 2008.
2. International workshop on “Chromosome Segregation and Aneuploidy”, Turku, Finland, June 2007.
3. Workshop on “Drosophila Cell Cycle Checkpoints”, Annual Conference of the Genetics Society of America, Philadelphia, USA, March 2007
4. International conference: “The Drosophila Cell Division Cycle”. Porto, Portugal. June 2006.
5. Workshop on “Drosophila Cell Cycle Checkpoints”, Annual Drosophila Research Conference, San Diego, USA. March, 2005.
6. International Workshop on Chromosome Segregation and Aneuploidy, September 2004, Cortona, Italy.
7. Workshop on “Drosophila Cell Cycle Checkpoints”, Annual Drosophila Research Conference, Washington, USA. March, 2004.
8. International Workshop on Chromosome Segregation and Aneuploidy, Chartres, France, 2001.
9. International Workshop and Chromosome Segregation and Aneuploidy, Porto, Portugal, June 1998.

Publications up to December 2008

1. Reis, R., Gouveia, S., Pereira, A., Matos, I., Sampaio, P., Maiato, H. and Sunkel, C.E. (2008) Dynein and Mast/Orbit/CLASP play antagonistic roles in regulating kinetochore-microtubule plus-end dynamics. (Submitted).
2. Martins, T., Maia, A., Steffensen, S. and Sunkel, C.E. (2008) Sgt1, a co-chaperone of Hsp90 stabilizes Polo and is required for centrosome organization. *EMBO J.* (in press).
3. Coelho, P.A., Queiroz-Machado, J., Carmo, A. M., Moutinho-Pereira, A., Maiato, H. and **Sunkel, C.E.** (2008) Dual role of Topoisomerase II in centromere resolution and Aurora B activity. *PlosBiol.* 6, 1758-1777.
4. Marinho J, Pedro M, Pinto DC, Silva AM, Cavaleiro JA, **Sunkel CE**, Nascimento MS. (2008). 4'-Methoxy-2-styrylchromone a novel microtubule-stabilizing antimitotic agent. *Biochem Pharmacol.* 15, 826-35.
5. Maia, A.F., Martins, T., Marinho, J. and **Sunkel, C.E.** Mitosis and spindle inhibitors (2007). In *Molecular Biology in Cancer: Toward New Therapies*, ed. by García Foncillas, Prous Science, Barcelona and Philadelphia.
6. Malmanche, N., Owen, S., Gegick, S., Steffensen, S., Tomkiel, J. E. and **Sunkel, C.E.** (2007). BubR1 is essential to maintain sister chromatid cohesion and the Synaptonemal Complex during *Drosophila* meiosis. *Curr.Biol.* 17, 1489-1497.
7. Maia, A.F., Lopes, C.S. and Sunkel, C.E. (2007) BubR1 and CENP-E have antagonistic effects upon the stability of microtubule-kinetochore attachments in *Drosophila* S2 cell mitosis. *Cell Cycle.* 6, 1367-1378.
8. Oliveira, R.A., Heidmann, S. and **Sunkel, C.E.** (2007). Condensin I binds chromatin early in prophase and displays a highly dynamic association with *Drosophila* mitotic chromosomes. *Chromosoma* 116, 259-274.
9. Orr, B., Bousbaa, H. and **Sunkel, C.E.** (2007). Mad2-independent spindle assembly checkpoint activation and controlled metaphase-anaphase transition in *Drosophila* S2 cells. *Mol. Biol. Cell* 18, 850-863.
10. Sousa A, Reis R, Sampaio P, **Sunkel CE.** (2007). The *Drosophila* CLASP homologue, Mast/Orbit regulates the dynamic behaviour of interphase microtubules by promoting the pause state. *Cell Motil Cytoskeleton.* 64,605-20.
11. Malmanche N, Maia A and **Sunkel CE.** (2006). The Spindle Assembly Checkpoint: preventing chromosome mis-segregation during mitosis and meiosis. *FEBS letters* 22;580(12):2888-95.
12. Oikemus SR, Queiroz-Machado J, Lai K, McGinnis N, **Sunkel CE** and Brodsky MH. (2006). Epigenetic telomere protection by *Drosophila* DNA damage response pathways. *PLoS Genetics.* 2(5):e71, 0693-0706
13. Colombié N, Bourbon H, Sampaio P, Verollet C, **Sunkel CE.**, Moisand A, Wright M and Raynaud-Messina B. (2006). The *Drosophila* γ -Tubulin Small Complex subunit Dgrip84 is required for structural and functional integrity of the spindle apparatus. *Mol. Biol. Cell* 17, 272-282.

14. Oliveira, R.A., Coelho, P.A. and Claudio E. **Sunkel, C.E.** (2005) The condensin I subunit Barren/CAP-H is essential for the structural integrity of centromeric heterochromatin during mitosis. *Mol.Cell.Biol.* 25, 8971-8984.
15. Pérez-Mongiovi, D., Malmanche, N., Bousbaa, H. and **Sunkel, C.E.** (2005). Maternal expression of the checkpoint protein BubR1 is required for synchrony of syncytial nuclear divisions and polar body arrest in *Drosophila melanogaster*. *Development*, 132, 4509-4520.
16. Lopes, C.S., Sampaio, P., Williams, B., Goldberg, M. and **Sunkel, C.E.** (2005). The *Drosophila* Bub3 protein is required for the mitotic checkpoint and for normal accumulation of cyclins during G₂ and early stages of mitosis. *J.Cell Sci.* 118, 187-198.
17. Oikemus, S.R., McGinnis, N., Queiroz-Machado, J., Tukachinsky, H., Takada, S., **Sunkel, C.E.** and Brodsky, M.H. (2004). *Drosophila* atm/telomere fusion is required for telomeric localization of HP1 and telomere position effect. *Genes and Dev.* 18, 1850-1861.
18. Maiato, H., Sampaio P. and **Sunkel, C.E.** (2004). Microtubule-Associated Proteins and their Essential Roles During Mitosis. *Int.Rev.Cytol.* 241, 53-153.
19. Maiato, H. and **Sunkel, C.E.** (2004). Kinetochore microtubule interactions during cell division. *Chromos.Res.* 12, 587-597.
20. Coelho, P., Queiroz-Machado, J. and **Sunkel, C.E.** (2004) Could condensin scaffold the mitotic chromosome? *Cell Cycle* 3, 538-540.
21. Logarinho, E., Bousbaa, H., Dias, J.M., Lopes, C., Amorim, I., Antunes-Martins, A. and **Sunkel, C.E.** (2004) Different spindle checkpoint proteins monitor microtubule attachment and tension at kinetochores in *Drosophila* Cells. *J.Cell Sci.* 117, 1757-1771.
22. Maiato, H., Rieder, C.L., Earnshaw, W.C. and **Sunkel, C.E.** (2003) How do kinetochores CLASP dynamic microtubules ? *Cell Cycle*. 2, 511-514.
23. Coelho, P., Queiroz-Machado, J. and **Sunkel, C.E.** (2003) Condensin-dependent localization of Topoisomerase II to an axial chromosomal structure is required for sister chromatid separation during mitosis. *J.Cell Sci.* 116, 4763-4776.
24. Maiato, H., Fairley, E.A.L., Rieder, C.L., Swedlow, J.R., **Sunkel, C.E.** and Earnshaw, W.C. (2003) Human CLASP1 is an outer kinetochore component that regulates spindle microtubule dynamics. *Cell* 113: 891-904.
25. Maiato, H., **Sunkel, C.E.** and Earnshaw, W.C. (2003) Dissecting mitosis by RNAi in *Drosophila* tissue culture cells. *Biol.Proced.Online* 5:153-161.
26. Lopes, C. and **Sunkel, C.E.** (2003) The spindle checkpoint: from normal cell division to tumorigenesis. *Arch.Med.Res.* 34, 155-165.
27. Maiato, H., Sampaio, P., Lemos, C.L., Carmena, M., Findley, J., Earnshaw, W.C. and **Sunkel, C.E.** (2002). MAST/Orbit has a role in microtubule-kinetochore attachment and is essential for chromosome alignment and maintenance of spindle bipolarity. *J.Cell Biol.* 157: 749-760.
28. Queiroz-Machado, J., Perdigão, J., Simões-Carvalho, P., Herrmann, S. and **Sunkel, C.E.** (2001) *tef*: a mutation that causes *telomere fusion* and severe genome rearrangements in *Drosophila melanogaster* . *Chromosoma* 110, 10-23.

29. Steffensen, S., Coelho, P.A., Cobbe, N., Vass, S., Costa, M., Hassan, H., Prokopenko, S.N., Bellen, H., Heck, M.M.S. and **Sunkel, C.E.** (2001) A role for *Drosophila* SMC4 in the resolution of sister chromatids in mitosis. *Curr. Biol.* 11:5:295-307.
30. Sampaio P. Rebollo E. Varmark H. **Sunkel C E.** and González C (2001) Organised microtubule arrays in γ -Tubulin-depleted *Drosophila* spermatocytes. *Curr.Biol.* 11:1788-1793
31. Lemos, C., Sampaio, P., Maiato, H., Costa, M., Omel'yanchuk, L., Liberal, V. and **Sunkel, C.E.** (2000). Mast, a conserved microtubule-associated protein required for bipolar mitotic spindle organisation. *EMBO.J.* 19, 3668-3682.
32. Bronze-da-Rocha E, Nóvoa A, Cunha C, Carmo-Fonseca M, Staines NA. and **Sunkel CE.** (2000) The human autoantigen MCP1 is required during early stages of DNA replication. *Chromosome Res.* 8, 699-711.
33. Cambiazo, V., Logarinho, E., Pottstock, H. and **Sunkel, C.E.** (2000) Microtubule binding of the *Drosophila* dmap-85 protein is regulated by phosphorylation *in vitro*. *FEBS lett.* 483, 37-42.
34. Warren, W.D., Steffensen, S., Lin, E., Coelho, P., Loupart, M., Cobbe, N., Lee, J., McKay, M.J., Orr-Weaver, T., Heck, M.H.S. and **Sunkel, C.E.** (2000) The *Drosophila* RAD21 cohesin persists at the centromere region in mitosis. *Curr.Biol.* 10:22:1463-1466.
35. Basu, J., Bousbaa, H., Logarinho, E., Li, Z., Williams, B.C., Lopes, C., **Sunkel, C.E.** and Goldberg, M.L. (1999) Mutations in the essential spindle checkpoint gene *bub1* cause chromosome missegregation and fail to block apoptosis in *Drosophila*. *J.Cell Biol.* 146: 13-28
36. Azevedo, C. and **Sunkel, C.E.** (1999) Mitose, In "Biologia Celular e Molecular", Ed. Carlos Azevedo, LIDEL-Edições Técnicas, Lisboa. pp311-333.
37. Moutinho-Santos, T., Sampaio, P., Amorim, I., and **Sunkel, C.E.** (1999) The mitotic POLO kinase shows a highly dynamic association with the mitotic apparatus during early *Drosophila* embryogenesis. *Biology of the Cell.* 91, 585-596.
38. Perdigão, J., Logarinho, E., Avides, M.C. and **Sunkel, C.E.** (1999) Molecular cloning, developmental expression and cellular localisation of the 70 kDa RPA 1 subunit of *Drosophila melanogaster*. *DNA and Cell Biol.* 18,923-936.
39. Bronze-da-Rocha, E., Catita, J.A., and **Sunkel, C.E.** (1998) Molecular cloning of Metaphase Chromosome Protein 1 (MCP1), a novel human autoantigen that associates with condensed chromosomes during mitosis. *Chromosome Res.* 6, 85-95.
40. Machado, C., **Sunkel, C.E.** and Andrew, D. (1998) Human antibodies reveal titin as a chromosomal protein. *J.Cell Biol.* 141, 321-334.
41. Perdigão, J. and **Sunkel, C.E.** (1998) The centromere: structural and functional aspects. In *Advances in Genome Biology* 5th Vol. (Ed.Ram Verma) p263-321.
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