

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel on page 1 of the Detailed Cost Estimate form for the initial budget period.

NAME		POSITION TITLE	
DOMANY, Eytan		Professor, Head of the Kahn Family Research Center for Systems Biology of the Human Cell	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Tel Aviv University, Tel Aviv, Israel	B.Sc.	1968	Physics
The Weizmann Institute of Science	M.Sc	1972	Physics
Cornell University, Ithaca, NY	Ph.D.	1973-7	Physics
University of Washington, Seattle, WA	Post-doc	1977-8	Physics

*Professional Experience:*

1971-1973 Nuclear Research Center Negev, Physicist  
 1978-1979 University of Washington, Research Assistant Professor  
 1979-1982 Weizmann Institute of Science, Senior Scientist  
 1982-1986 Weizmann Institute of Science, Associate Professor  
 1986-present Weizmann Institute of Science, Professor  
 1993-1999 Weizmann Institute of Science, Head, Dept. of Physics of Complex Systems  
 1999-2001 Weizmann Institute of Science, Chairman, Council of Professors  
 2003- Weizmann Institute of Science, Head, Center for Systems Biology

*Visiting and short term appointments:*

Los Alamos Scientific Laboratory (1979-1989); University of Copenhagen (1980, 20020); Stanford University (1983-1984); Brookhaven National Laboratory (1985); IBM Yorktown Research Lab (1986); Inst. Theoretical Physics, UC Santa Barbara (1987,2001,2003); IHES, Bures-sur-Yvette (1988); Universite Paris VII (1989); Oxford University (1990-1991); University of Rochester (1991); Hong Kong University of Science and Technology (1995); Ecole Normale Superieure Paris (1996); Institut Curie, Paris (2003)

*Relevant Professional Activities:*

Member, Editorial Board, Journal of Statistical Physics (1993 – 1999)  
 Member, IUPAP Commission on Statistical Physics, (1994-1997)  
 Editor, Physics of Neural Networks (Springer-Verlag)  
 Member, Advisory Board and editorial Board, Journal os Statistical Mechanics: Theory & Experiment  
 Member, Editorial Board, Cancer Informatics

*Honors and Awards:*

Dr. C. Weizmann Post-Doctoral Fellow, 1977-1979; Bat-Sheva de Rothschild Fellow, 1982  
 A. Dissentshik Career Development Chair, 1981; Lubell Prize, 1981; Levinson Prize, 1986  
 Henry J. Leir Professorial Chair, 1999; RAD-Biomed Biotechnology Prize (jointly with I.R. Cohen), 2005

*Complete references to all publications during the past 3 years:*

1. FSSP to SCOP and CATH (F2CS) Prediction Server, Gad Getz, Alina Starovolsky and Eytan Domany, *Bioinformatics* **20**, 2150 (2004).
2. Lack of Ultrametricity in the Low Temperature phase of 3D Ising Spin Glasses, Guy Hed, A. P. Young and Eytan Domany, *Phys. Rev. Lett.* **92** 157201 (2004).
3. Functional immunomics: Microarray analysis of IgG autoantibody repertoires predicts the future response of NOD mice to an inducer of accelerated diabetes. Francisco J. Quintana, Peter H. Hagedorn, Gad Elizur, Yifat Merbl, Eytan Domany and Irun R. Cohen, *PNAS* **101**, 14615 (2004).
4. Gene expression analysis reveals a strong signature of an interferon induced pathway in childhood lymphoblastic leukemia as well as in breast and ovarian cancers. Uri Einav, Yuval Tabach, Gad Getz, Assif Yitzhaky, Ugur Ozbek, Ninette Amariglio, Shai Izraeli, Gideon Rechavi and Eytan Domany, *Oncogene* **24**, 6367 (2005).
5. Design Principle of Gene Expression Used by human Stem Cells; Implication for Pluripotency. Michal Golan-Mashiach, Jean-Eude Dazard, Sharon Gerech Nir, Ninette Amariglio, Tamar Fisher, Jasmine Jacob-Hirsch, Bela Bielorai, Sivan Osenberg, Omer Barad, Gad Getz, Amos Toren, Gideon Rechavi, Joseph Eldor-Itskovitz, Eytan Domany and David Givol, *FASEB J.* **19**, 147 (2005).
6. Finding Motifs in Promoter Regions, Libi Hertzberg, Or Zuk, Gad Getz and Eytan Domany, *J. Comp. Biol.* **12**, 314 (2005).
7. Transcriptional programs following genetic alterations in p53, INK4A, and H-Ras genes along defined stages of malignant transformation, Michael Milyavsky, Yuval Tabach, Igor Shats, Neta Erez, Yehudit Cohen, Xiaohu Tang, Marina Kalis, Ira Kogan, Yosef Buganim, Naomi Goldfinger, Doron Ginsberg, Curtis C. Harris, Eytan Domany and Varda Rotter, *Cancer Research*, **65**, 4531 (2005).
8. Outcome signature genes in breast cancer: is there a unique set? Liat Ein-Dor, Itai Kela, Gad Getz, David Givol and Eytan Domany, *Bioinformatics* **21**, 171 (2005).
9. Genome- wide midrange transcription profiles reveal expression level relationships in human tissue specification. Itai Yanai, Hila Benjamin, Michael Shmoish, Vered Chalifa-Caspi, Maxim Shklar, Ron Ophir, Arren Bar-Even, Shirley Horn-Saban, Marilyn Safran, Eytan Domany, Doron Lancet and Orit Shmueli, *Bioinformatics* **21**, 650 (2005)
10. Vascular gene expression and phenotypic correlation during differentiation of human embryonic stem cells. Sharon Gerech-Nir, Jean-Eudes Dazard, Michal Golan-Mashiach, Sivan Osenberg, Alex Botvink, Ninette Amariglio, Eytan Domany, Gideon Rechavi, David Givol and Joseph Eldor-Itskovitz, *Developmental Dynamics* **232**, 487 (2005).
11. Sorting Points Into Neighborhoods (SPIN): data analysis and visualization by ordering distance matrices, D. Tsafir, I. Tsafir, L. Ein-Dor, O. Zuk and E. Domany *Bioinformatics* **21**, 2301 (2005).
12. Semi Supervised Learning – a Statistical Physics Approach, G. Getz, N. Shental and E Domany Proceedings of "Learning with partially classified training data - ICML2005" workshop, p.37.
13. Induction in myeloid leukemic cells of genes that are expressed in different normal tissues. Joseph Lotem, Hila Benjamin, Dvir Netaneli, Eytan Domany and Leo Sachs. *PNAS* **101**, 16022 (2004).
14. The promoters of human cell cycle genes integrate signals from two tumor suppressive pathways during cellular transformation, Y. Tabach, M. Milyavsky, O. Zuk, A. Yitzhaky, I. Scats, E. Domany, V. Rotter and Y. Pilpel, *Mol. Sys. Biol.* **1**, (2005) doi:10.1038/msb4100030
15. Asymptotics of the Entropy Rate for a Hidden Markov Process, Or Zuk, Ido Kanter and Eytan Domany, Proceedings of Data Compression Conference DCC2005, Snowbird, Utah, Ed. J.A. Storer and M. Cohn, IEEE Computer Society, p.173 (2005)
16. The Entropy of a Binary Hidden Markov Process, O. Zuk, I. Kanter and E. Domany, *J. Stat. Phys.* **121**, 343-360 (2005)
17. Identification of a Proliferation Gene Cluster Associated with HPV E6/E7 Expression Level and Viral DNA Load in Invasive Cervical Carcinoma, Christophe Rosty, Michal Sheffer, Dafna Tsafir, Nicolas

Stransky, Ilan Tsafrir, Martine Peter, Patricia de Crémoux, Anne de La Rochefordière, Rémy Salmon, Thierry Dorval, Jean Paul Thiery, Jérôme Couturier, François Radvanyi, Eytan Domany and Xavier Sastre-Garau, *Oncogene* **24**, 7094-7104 (2005).

18. Analysis of DNA-chip and antigen chip data: studies of cancer, stem cells and autoimmune diseases. E Domany, *Comp. Phys. Comm.* **169**, 183 (2005). Advanced molecular profiling detects novel function of Dickkopf-3 in the regulation of bone formation. Hadi Aslan, Osnat Amir-Ravid, Brian M Clancy, Saeid Rezvankhah, Debra Pittman, Gadi Pelled, Gadi Turgeman, Yoram Zilberman, Zulma Gazit, Andrea Hoffmann, Gerhard Gross, Eytan Domany and Dan Gazit, *Journal of Bone and Mineral Research* **21**, 1935-1945 (2006).
19. Relationship of Gene expression and Chromosomal Abnormalities in Colorectal Cancer, D. Tsafrir, M. Bacolod, Z. Selvanayagam, I. Tsafrir, J. Shia, Z. Zeng, H. Liu, C. Krier, R. F. Stengel, F. Barany, W.L. Gerald, P.B. Paty, E. Domany and D.A. Notterman, *Cancer Research* **66**, 2129 (2006).
20. Human cancers over express genes that have distinct expression patterns in different normal human tissues. Joseph Lotem, Dvir Netanel, Eytan Domany and Leo Sachs, *PNAS* **102**, 18556-18561 (2005).
21. From finite-system entropy to entropy rate for a Hidden Markov Process, O. Zuk, E. Domany, I. Kanter and M. Aizenman, *IEEE Signal Processing Letters* **13**, 517-520 (2006)
22. Thousands of samples are needed to generate a robust gene list for predicting outcome in cancer. Liat Ein-Dor, Or Zuk and Eytan Domany, *PNAS* **103**, 5923-5928 (2006).
23. Multiple adaptive mechanisms to chronic liver disease revealed at early stages of liver carcinogenesis in the Mdr2-knockout mice. Mark Katzenellenbogen, Orit Pappo, Hila Barash, Naama Klopstock, Lina Mizrahi, Devorah Olam, Jasmine Jacob-Hirsch, Ninette Amariglio, Gidi Rechavi, Leslie Ann Mitchell, Ron Kohen, Eytan Domany, Eithan Galun and Daniel Goldenberg. *Cancer Research* **66**, 4001- 4010, (2006).
24. Nanog transforms NIH3T3 cells and targets cell-type restricted genes. Dan Piestun, Bose S. Kochupurakkal, Jasmine Jacob-Hirsch, Sharon Zeligson, Mark Koudritsky, Eytan Domany, Ninette Amariglio, Gideon Rechavi and David Givol. *Biochemical and Biophysical Research Communications* **343**, 279–285 (2006).
25. Alu elements contain many binding sites for transcription factors and may play a role in regulation of developmental processes. Paz Polak and Eytan Domany, *BMC Genomics* **7**, 133 – 148 (2006).
26. Gene Expression Profiles of AML Derived Stem Cells; Similarity to Hematopoietic Stem Cells. H Gal, N Amariglio, L Trakhtenbrot, J Jacob-Hirsh, O Margalit, A Avigdor, A Nagler, S Tavor, L Ein-Dor, T Lapidot, E Domany, G Rechavi and D Givol. *Leukemia* **20**, 2147-2154 (2006)
27. On the Number of Samples Needed to Learn the Correct Structure of a Bayesian Network. Or Zuk, Shiri Margel and Eytan Domany. *Proc. 22nd Conf. on Uncertainty in Artificial Intelligence*, pp. 560-567 Cambridge, MA (2006).
28. Antigen-chip technology for accessing global information about the state of the body. Francisco J. Quintana, Yifat Merbl, Eli Sahar, Eytan Domany and Irun R. Cohen, *Lupus* **15**, 428-430 (2006)
29. Prediction of Chromosomal Aneuploidy from Gene Expression Data. Libi Hertzberg, David R. Betts, Susana C. Raimondi, Beat W. Schäfer, Daniel A. Notterman, Eytan Domany, Shai Izraeli. *Genes, Chromosomes and Cancer* **46**, 75-86 (2007).
30. TGFβ-dependent gene expression profile during maturation of dendritic cells. Fainaru Ofer, Shay Tal, Hantisteanu Shay, Goldenberg Dalia, Domany Eytan and Groner Yoram, *Genes and Immunity* **8**, 239 – 244 (2007)
31. A module of negative feedback regulators defines growth factor signaling. Ido Amit, Ami Citri, Tal Shay, Yiling Lu, Menachem Katz, Fan Zhang, Gabi Tarcic, Doris Siwak, John Lahad, Jasmine Jacob-Hirsch, Ninette Amariglio, Nora Vaisman, Eran Segal, Gideon Rechavi, Uri Alon, Gordon B. Mills, Eytan Domany and Yosef Yarden, *Nature Genetics* **39**, 503-512 (2007)
32. STOP: searching for transcription factor motifs using gene expression. Libi Hertzberg, Shai Izraeli and Eytan Domany, *Bioinformatics* **23**, 1737-1743 (2007)

33. Expression of L1CAM and ADAM10 in human colon cancer cells induces metastasis. Nancy Gavert, Michal Sheffer, Shani Raveh, Simone Spaderna, Michael Shtutman, Thomas Brabletz, Francis Barany, Phillip Paty, Daniel Notterman, Eytan Domany and Avri Ben-Ze'ev, *Cancer Research* **67**, 7703-7712 (2007)
34. Molecular mechanisms of the chemopreventive effect on hepatocellular carcinoma development in Mdr2 knockout mice. Mark Katzenellenbogen, Mark, Lina Mizrahi, Orit Pappo, Orit), Naama Klopstock, Naama, Devorah Olam, Devorah, Hila Barash, Eytan Domany, Eytan, Eithan Galun, Daniel Goldenberg, *Molecular Cancer Therapeutics* **6**, 1283-1291 (2007).
35. Genes overexpressed in different human solid cancers exhibit different tissue-specific expression profiles. Jacob Bock Axelsen, Joseph Lotem, Leo Sachs, and Eytan Domany, *PNAS* **104**, 13122 – 13127 (2007)
36. Wide-Scale Analysis of Human Functional Transcription Factor Binding Reveals a Strong Bias towards the Transcription Start Site. Yuval Tabach, Ran Brosh, Yossi Buganim, Anat Reiner, Or Zuk, Assif Yitzhaky, Mark Koudritsky, Varda Rotter and Eytan Domany, *PLoS ONE* **1**, e807 (2007)

*Representative earlier publications pertinent to this application:*

1. Superparamagnetic Clustering of Data, M. Blatt, S. Wiseman and E. Domany, *Phys. Rev. Lett.* **76**, 3251 (1996).
2. Data Clustering Using a Model Granular Magnet, M. Blatt, S. Wiseman and E. Domany, *Neural Computation* **9**, 1805-1842 (1997).
3. Coupled two-way clustering analysis of gene microarray data, G. Getz, E. Levine and E. Domany, *PNAS* **97**, 12079 (2000).
4. Resampling method for unsupervised estimation of cluster validity, Erel Levine and Eytan Domany, *Neural Comp.* **13**, 2573-2593 (2001).
5. DNA microarrays identification of primary and secondary target genes regulated by p53, K. Kannan, N. Amariglio, G. Rechavi, J. Jakob-Hirsch, I. Kela, N. Kaminski, G. Getz, E. Domany and D. Givol, *Oncogene* **20**, 2225 (2001).
6. Classification of human astrocytic gliomas on the basis of gene expression: A correlated group of genes with angiogenic activity emerges as a strong predictor of subtypes. Godard, S., Getz, G., Kobayashi, H., Farmer, P., Delorenzi, M., Nozaki, M., Diserens, A.-C., Hamou, M.-F., Dietrich, P.-Y., Villemure, J.-G., Janzer, R. C., Bucher, P., Stupp, R., de Tribolet, N., Domany, E., Hegi, M. E. *Cancer Research*, **63**, 6613 (2003).
7. Coupled Two-Way Clustering Server, G. Getz and E. Domany, *Bioinformatics* **19** 1153 (2003).
8. Coupled Two-Way Clustering analysis of breast cancer and colon cancer gene expression data, G. Getz, H. Gal, D. A. Notterman and E. Domany, *Bioinformatics* **19**, 1079 (2003).
9. Genome-wide comparison of keratinocyte and squamous cell carcinoma response to UV irradiation: implication for skin and epithelial cancer development, J.-E. Dazard, H. Gal, N. Amariglio, G. Rechavi, E. Domany and D. Givol, *Oncogene* **22**, 2993 (2003).
10. Expression profiles of acute lymphoblastic and myeloblastic leukemias with ALL-1 rearrangements, Rozovskaia, T., Ravid-Amir, O., Tillib, S., Getz, G., Feinstein, E., Agrawal, H., Nagler, A., Rapoport, E. Issaeva, I., Matsuo, Y., Kees, U. R., Lapidot, T., Lo Coco, F., Foa, R., Mazo, A., Nakamura, T., Croce, C.M., Cimino, G., Domany, E. and Canaani, E. *PNAS* **100**, 7853 (2003).
11. Inhibition of p53-induced apoptosis without affecting expression of p53-regulated genes, Joseph Lotem, Hilah Gal, Rachel Kama, Ninette Amariglio, Gideon Rechavi, Eytan Domany, Leo Sachs and David Givol. *PNAS* **100**, 6718 (2003).