List of Publications

1. Articles.

1. **Mitrani E**., Rubinstein G. (1972) Human voice recognition using an analog-digital scheme. IEEE. Vol. 1.
2. **Mitrani E**. (1975) A computer approach to epidermal homeostasis. ICCC Computer Bul. London. Vol. 1.
3. **Mitrani E**., Marks R. (1978) Towards characterization of epidermal cell migration promotion activity in serum. British Journal of Dermatology 99, 513-518.
4. Bullough W.S., **Mitrani E**. (1978) The significance of vertical mitosis in the epidermis. British Journal of Dermatology 99, 603-610.
5. **Mitrani E**. (1978) Possible role of connective tissue in epidermal neoplasia. British Journal of Dermatology 99, 233-244.
6. Marks R., Pearse A.D., Holt P.J.A., **Mitrani E**., Nuki G. (1978) Evidence for changes in antigenicity premalignant lesions of the epidermis. INSERM 88, 247-254.
7. **Mitrani E**., Marks R. (1979) Procollagen synthesized by new born rat skin in culture. British Journal of Experimental Pathology 60, 76-84.
8. **Mitrani E**. (1979) Connective tissue in epidermal neoplasia. Medical Digests July, 33-34).
9. **Mitrani E**., Eyal-Giladi H. (1981) Hypoblastic cells can form a disc inducing an embryonic axis in chick epiblasts. **Nature** 289, 800-802.
10. **Mitrani E**. (1981) A computer model for epidermal cellular interactions. Biosystems 14, 179-191.
11. **Mitrani E**. (1982) A general method for evaluating the cell cycle time in mammalian epidermis. British Journal of Dermatology 107, 1-6. IF=3.7, cited=4. Rank 5 out of 59.
12. **Mitrani E.,** Eyal-Giladi H. (1982) Cells from chick embryos in culture. Differentiation 21, 56-61.
13. **Mitrani E**., Farberov A. (1982) Fibronectin expression during the processes leading to axis formation in the chick embryo. Developmental Biology 91, 197-201.
14. **Mitrani E**., Marks R. (1982) Procollagen localization in normal, premalignant and malignant lesions of the epidermis. Archives of Dermatological Research 274, 21-28.
15. **Mitrani E**. (1982) Primitive streak-forming cells of the chick invaginate through a basement membrane. Wilhem Roux Arch. Dev. Biology 191, 320-324.
16. **Mitrani E**., Shimoni Y., Eyal-Giladi H. (1983) Nature of the hypoblastic influence on the chick embryo epiblast. J. Embryol. Exp. Morph., 75, 21-30. (now Development).
17. **Mitrani, E**. (1983) Is upward basal cell movement independent of mitosis in the normal epidermis? British Journal of Dermatology, 109 635-642.
18. **Mitrani E**., Eyal-Giladi H. (1984) Differentiation of dissociated- reconstituted epiblasts of the chick under the influence of a normal hypoblast. Differentiation, 26, 107-111.
19. **Mitrani E**. (1984) Early chick embryonic cells can form clones in agarose cultures. Experimental Cell Research 152(1), 148-153.
20. **Mitrani E**. (1984) Mitosis in the formation and function of the primary hypoblast of the chick. Wilhem Roux Arch. Developmental Biology 193, 402-405.
21. **Mitrani E.** (1984) Migration and mitosis in the epidermis. British Journal of Dermatology. 111(6):733-4.
22. **Mitrani E**. (1984) Depolarized chick blastoderms fail to self generate bilateral symmetry. Differentiation 27, 189-191.
23. Khaner O., **Mitrani E**., Eyal-Giladi H. (1985) Developmental potencies of area opaca and marginal zone areas of early chick blastoderms. Development 89, 235-241.
24. Einhorn, L., **Mitrani E**. (1986) Restriction of cloning potential in agarose of early chick embryonic cells as development progresses. Cell Differentiation 18, 153-156
25. **Mitrani E**., Coffin J., Boedtker H., Doty P. (1987) Rous sarcoma virus is integrated but not expressed in chicken early embryonic cells. **Proc. Natl. Acad. Sci. USA** 84, 2781-2784.

26. **Mitrani E**., Shimoni Y. (1989) Retinoic acid inhibits growth in agarose of early chick embryonic cells and may be involved in regulation of axis formation. Development 107, 275-280.
27. **Mitrani E**., Shimoni Y. Induction by soluble factors of organized axial structures in chick epiblasts (1990) **Science,** 247, 1092-1094.
28. **Mitrani E.**, Gruenbaum Y., Shohat H., Ziv T. (1990) Fibroblast growth factor in early chick embryo development Development, 109, 387-393.
29. **Mitrani E**., Ziv T., Thomsen G., Shimoni Y., Melton D.A., Bril A. (1990) Activin can induce the formation of axial structures and is expressed in the hypoblast of the chick. **Cell,** 63, 495-501.
30. **Mitrani, E** [PI]. (1992). Formation of axial mesoderm in chick epiblasts. In: Seminars in Developmental Biology, 3, 195-201.
31. Ziv T[s]., Shimoni Y[t]., **Mitrani E[PI]**. (1992) Activin can generate ectopic axial structures in isolated epiblasts. Development, 115, 689-694.
32. Harris I[s]., Mizrahi L[s]., Ziv T[s]., Thomsen G[s]., **Mitrani E[PI]**. (1993) Identification of TGF-ß-related genes in the early chick embryo. Wilhem Roux Arch. Developmental Biology, 203:159-163.
33. Goldshmidt O[s]., Zcharia E[s]., Aingorn H[s]., Guatta-Rangini Z[t]., Atzmon R[co]., Michal I[co]., Pecker I[co]., **Mitrani E[PI]**., Vlodavsky[c] I. (2001) Expression pattern and secretion of human and chicken heparanase are determined by their signal peptide sequence. J Biol Chem., 276(31): 29178-87.
34. Goldshmidt O[s]., Zcharia E[s]., Abramovitch R[s]., Metzger S[co]., Aingorn H[co]., Friedmann Y[s]., Schirrmacher V[co]., **Mitrani E[c]**., Vlodavsky I[PI]. (2002) Cell surface expression and secretion of heparanase markedly promote tumor angiogenesis and metastasis. **Proc Natl Acad Sci USA**., 23; 99(15):10031-6.
35. Grad E[s]., Fuchs A[t]., Lev H[co]., Kotok T[co]., Shemesh R[co]., Shouval D[co]., Ilan Y[co]., **Mitrani E[PI]**. (2003) Liver Micro-Organs Transcribe Albumin And Clotting Factors And Increase Survival of 92% Hepatectomized Rats. J. Hepatol., 39(4):552-8.
36. Gershonowitz A[s]., Grad E[s]., Shouval D[co]., Mitrani D[s]., Ilan Y[co] ., **Mitrani, E[PI]**. (2004) Development of a scaled up liver device incorporating cryo-preserved pig liver micro-organs. J. Hepatol., 41(6):950-6.
37. Hasson E[s]., Arbel D[s]., Verstandig A[co]., Shimoni Y[t]., **Mitrani E[PI]**. (2005) A cell based multifactorial approach to angiogenesis. J. Vasc Res., 42(1):29-37. Hasson E[s]., Slovatizky Y[s]., Shimoni Y[t]., Falk H[t]., Panet A[co]., **Mitrani E[PI]**. (2005) Solid tissues can be manipulated ex vivo and used as vehicles for gene therapy. J. Gene Med., 7(7):926-35.
38. **Mitrani E**[PI]., Nadel G[s]., Hasson E[s]., Harari E[s]., Shimoni Y[t]. (2005) Epithelial-mesenchymal interactions allow for epidermal cells to display an in vivo-like phenotype in vitro. Differentiation, 73(2-3):79-87 **(Cover article).**
39. Hasson E[s]., Gallula J[t]., Shimoni Y[t]., Grad-Itach E[s]., Marikovsky M[co]., **Mitrani E[PI]**. (2006) Skin Derived Micro Organs induce Angiogenesis in Rabbits. J. Vasc Res., 43:139–148.
40. Voisine P[co]., Rosenberg A[co]., Wykrzykowska J[co]., Shamis J[s]., Wu G[s]., Appelbaum[co] E., Li[s] J., Sellke F[co]., Gibson C[co]., Carrozza J[co]., **Mitrani E[PI]**., Laham R[co]. (2008) Skin-derived microorgan autotransplantation as a novel approach for therapeutic angiogenesis. Am J Physiol Am J Physiol Heart Circ Physiol. 294(1):H213-219.
41. Shamis Y[s]., Hasson E[s]., Soroker A[s]., Bassat E[s]., Shimoni Y[t]., Ziv T[s]., Sionov RV[co]., **Mitrani E[PI]**. (2011) Organ-specific scaffolds for in vitro expansion, differentiation and organization of primary lung cells. Tissue Eng., (**Cover article**).
42. Revel A[co]., Laufer N[co]., Ben Meir A[s]., Lebovich M[s]., **Mitrani E[PI]**. (2011) Micro-organ ovarian transplantation enables pregnancy: a case report. Hum Reprod., 17(8):861-870.
43. **Mitrani E[PI]**., Pearlman A[co]., Stern B[s]., Miari R[s]., Goltsman H[s]., Kunicher N[s]., Panet A[co]. (2011) Biopump: Autologous skin-derived micro-organ genetically engineered to provide sustained continuous secretion of therapeutic proteins. Dermatol Ther., 24(5):489-497.
44. Michaeli J[s]., Weintraub M[s]., Gross E[s]., Ginosar Y., Ravitsky V[s]., Eizenman E[s]., **Mitrani E[co]**., Lebovich M[s]., Laufer N[co]., Kennedy S[co]., Revel A[PI]. (2012) Fertility preservation in girls. Obstetrics and Gynecology International, 2012:139-193.

45. Groot H[co]., Muñoz-Camargo C[s]., Moscoso J[s]., Riveros G[s]., Salazar V[s]., Kaston Florez F[co]., **Mitrani E[PI]**. (2012) Skin micro-organs from several frog species secrete a repertoire of powerful antimicrobials in culture. J Antibiotics, 65(9):461-7.
46. Bodaker M[s]., Louzon Y[co]., **Mitrani E[PI]**. (2013) Mathematical Conditions for Induced Cell Differentiation and Trans-differentiation in Adult Cells. Bulletin of Mathematical Biology, 75: 819-844.
47. Bodaker M[s]., Meshorer E[co]., **Mitrani E[co]**., Louzon Y[PI]. Genes related to differentiation are correlated with the gene regulatory network structure. Bioinformatics, 30(3):406-13.
48. Finesilver G[s]., Bailly J[co]., Kahana M[s]., **Mitrani E[PI]**. (2014) Kidney Derived Micro-Scaffolds enable HK-2 Cells to develop more in-vivo like properties. Exp. Cell Res., 10;322(1):71-80.
49. Finesilver G[s]**.,** Kahana M[s]**., Mitrani E[PI]**. (2014) Kidney-Specific Micro-Scaffolds support in vitro Expansion, Differentiation, and Organization of Human Embryonic Stem Cells. Tissue Eng Part C Methods. 2014 Dec;20(12):1003-15. doi: 10.1089/ten.tec.2013.0574. Epub 2014 May 20.
50. Sionov R., Finesilver G., Kahana M., Soroker A., Zlotkin E., Saad Y., Bodaker M., Alpert E., **Mitrani E**. Beta cells secrete significant and regulated levels of insulin for long periods when seeded onto acellular micro-scaffolds. Tissue Eng Part A. 2015 Nov;21(21-22):2691-702. doi: 10.1089/ten.TEA.2014.0711
51. Muñoz-Camargo C, Méndez MC, Salazar V, Moscoso J, Narváez D, Torres MM, Florez FK, Groot H, **Mitrani E**. (2016) Frog skin cultures secrete anti-yellow fever compounds. J Antibiot (Tokyo). 2016 Nov;69(11):783-790. doi: 10.1038/ja.2016.16. Epub 2016 Apr 6.
52. Abualhassan N, Sapozhnikov L, Pawlick RL, Kahana M, Pepper AR, Bruni A, Gala-Lopez B, Kin T, **Mitrani E[PI]**, Shapiro AM. (2016) Lung-Derived Microscaffolds Facilitate Diabetes Reversal after Mouse and Human Intraperitoneal Islet Transplantation. PLoS One. May 26;11(5): e0156053.

2. Patents.

1. Mitrani, E. (1991) Treatment of hyper-proliferative epidermal conditions with Activin A. US Patent No. 5,387,576 granted, Feb 1995. Licensed to Ontogeny Inc. in 1994 as core technology to start the company
2. Mitrani, E. (1995) Pharmaceutical compositions comprising Activin Or Activin agonist, and uses related thereto. US Patent No US Patent No. 5,753,612 granted May 1998. Licensed to Ontogeny Inc.
3. Mitrani, E. (1994) In vitro Micro-Organs. Us Patent No 5,888,720 granted March 30, 1999. Core technology used (together with others) to raise money from investors to start Ontogeny Inc. ($16M US were raised).
4. Mitrani, E. (1995) In vitro Micro-Organs and uses related thereto -continuation in progress- (CIP). Licensed to Ontogeny Inc.
5. Mitrani E[PI], Pang K[C], Homa, M[Tec]. (1998) Bile duct progenitor cells and methods of use: EP0832194-A1. Licensed by Ontogeny Inc.
6. Mitrani E. (1997) A device for modification of a biological fluid using Micro-Organs, US patent 6,372,482 granted 2002. No. 6,472,200. Licensed to Epigenesis Ltd.
7. Mitrani E. (2000) Method for inducing angiogenesis by micro-organs. PCT filed. Licensed to Epigenesis Ltd.
8. Mitrani E. (2002) Method and device for inducing biological processes by micro-organs. Filed in USA. Licensed to Medgenics.
9. Perlman A[PI], Garfunkel L[C] and Mitrani E[C]. (2002) Efficient Methods For Assessing And Validating Candidate Protein- Based Therapeutic Molecules Encoded By Nucleic Acid Sequence Of Interest. PCT filed. In collaboration with Medgenics
10. Mitrani E. (2003) Method And Device For inducing biological processes by micro-organs. PCT filed in 2003. Licensed to Medgenics Inc.
11. Mitrani E[PI], Mitrani D[C]. (2002) A new micro forceps for handling small objects. Incorporated into PCT of (8). Licensed to Epigenesis Ltd.

12. Mitrani E. (2004) Methods of Inducing differentiation in stem cells, methods of generating tissue using scaffold matrices derived from micro-organs and stem cells, methods of producing adult stem cells and methods of continuously generating stem cells by implantation of micro-organs as sources of stem cells. US patent granted Nov 2007. Roche financed research with right of first refusal
13. Mitrani E. (2010) Methods of generating tissue using devitalized, acellular scaffold matrices derived from micro-organs. (A new method for generating an Engineered Endocrine Micro Pancreas). Submitted, in progress. Roche financed research with right of first refusal.
14. Mitrani E. (2010) Methods of generating tissue using devitalized, acellular scaffold matrices derived from kidney originating micro-organs. Submitted, in progress. Submitted, in progress. Roche financed research with right of first refusal.
15. Mitrani E. (2011) A Growth Factor-Based Formulation For Treating Ageing Skin. Submitted, in progress. In negotiation with a Russian group.
16. Mitrani E[PI]., Groot H[C]. (2013) New Antimicrobial Substances Derived from Frog Skin. Submitted, to US patent office.
17. Mitrani E. (2014) A method for expanding and cryo-preserving beta cells. In consideration for submission by Yissum: The Authority for Research and Development of the Hebrew University.
18. Mitrani E, Sapozhnikov L. (2016) A new method for immunoprotective encapsulation. Filed 11.26.15.
19. Mitrani E, Revel A (2017) "In Vivo Ovarian Micro Organs". Filed on 11.29.17
20. Mitrani E. (2018) The present invention deals with a method and a bionic device containing human skin which can be kept in culture for several days in defined conditions and under different microfluidic conditions. In order to check candidate test compounds/compositions penetration and physiological effects on skin homeostasis.
21. Mitrani E. (2018) A novel biopump based on artificial micro-organs. Being prepared for submission by Yissum: The Authority for Research and Development of the Hebrew University.

3. Oral Presentations

1. Mitrani E. (1983). Growth factors in skin Homeostasis. Invited to Gordon Conference in Epithelial Differentiation, Tilton School, Manchester US.
2. Mitrani E. (1987) Polarity in early development. Invited Gordon Conference on Developmental Biology, Proctor Academy, , Manchester US.
3. Mitrani E. (1987) Axis formation in vertebrate development. Invited Gordon Conference on Developmental Biology, Proctor Academy, Manchester US.
4. Mitrani E. (1991) Induction of Axial Mesoderm in Vertebrates. Department of Developmental Biology, University of California San Francisco (UCSF).
5. Mitrani E. (1991) Induction of Axial Mesoderm in Vertebrates. Department of Developmental Biology, University of Berkley San Francisco California.
6. Mitrani E. (1992) Induction of Axial Mesoderm in Vertebrates. Developmental Biology, The National Institutes of Health, Bethesda Maryland.
7. Mitrani E. (1993) Induction of Axial Mesoderm in Vertebrates. Department of Developmental Neurobiology Columbia University.
8. Mitrani E. (1994) Induction of Axial Mesoderm in Vertebrates. Juan March Foundation conference on Early Development. Madrid, Spain. Invited speaker.
9. Mitrani E et al. (2001) Implanted liver micro-organs can rescue anhepatic rats. 52nd annual meeting. Amer. Assoc. for the Study of Liver Diseases. Dallas, Texas. Selected as one of few for oral presentation amongst > 3000 abstracts.
10. Mitrani E. (2003). Function of liver micro-organs after implantation in 92% hepatectomized rats. From stem cells to Xenotransplantation. Monothematic conference. European Association for the study of the liver. Venice, Italy. Invited speaker.
11. Mitrani E. (2003) Artificial Liver device. Dow Chemical. Ann Arbor Michigan.

12. Mitrani E. (2003) A multifactorial approach to angiogenesis. Invited speaker, Angiogenesis unit, Beith Israel Deaconess Hospital, Harvard Medical School.
13. Mitrani E. et al. (2004) Skin-Derived Micro-organ increase lateral wall perfusion in a pig model of myocardial infarction. American Heart Association, New Orleans. Selected as one of few for oral presentation amongst >20000 abstracts.
14. Mitrani E. (2005) Skin homeostasis and ageing. Invited. Johnson and Johnson, New Jersey, USA.
15. Mitrani E. (2007) An in vivo-like, ex vivo method for large throughput screening of compounds. Institute for Environment and sustainability of the European Commission Joint Research Centre (JRC), Ispra, Italy.
16. Mitrani E. (2008) Importance of epithelial stromal interactions for regenerative medicine. Invited speaker. Universidad Nacional, Buenos Aires, Argentina.
17. Mitrani E. (2009) Stem cells into tissues. Invited speaker forum for Latin American students. London, England.
18. Mitrani E. (2010) New Platforms for Innovation. Invited speaker. Instituto Nacional de Ciencias, Bogota, Colombia.
19. Mitrani E. et al (2011) Autologous transplantation of very thin ovarian fragments which preserve the ovary's main cortex structure lead to successful pregnancy. The Israeli Fertility Association. (Presented by Revel and Mitrani).
20. Mitrani E. (2012) Translating a Research Project into a succesful Biotecnology company. Vanguardia Tecnologica. Mexico Df, Mejico. Invited speaker.
21. Mitrani E. et al. (2012) Organ-Specific Scaffolds for In Vitro Expansion, Differentiation and Organization of embryonic stem cells. Selected for Oral Presentation at The International Stem Cell Conference in Yokohama, Japan (2012) (presented by a Ph.D. student: G. Finesilver).
22. Mitrani E. (2013) Human Engineered Micro-Pancreata (EMPs) secrete significant and regulated levels of insulin for very long periods. 12th Congress of the Cell Transplantation Society, Milano, Italy. Selected for Oral Presentation.
23. Mitrani E. (2013). Human Engineered Micro-Pancreata. Diabetes Research Institute –DRI_ Jackson Memorial, Miami, FLA.
24. Mitrani E. (2013). Human Engineered Micro-Pancreata. The Schultz Institute for Diabetes. Minneapolis, Minnesota.
25. Mitrani E. (2013). Human Engineered Micro-Pancreata. Clinical Islet Transplant Program at the University of Alberta in Edmonton, Canada. (where the "Edmonton Protocol" for islet transplantation was developed.

4. Special Awards

1. 2001 Outstanding teacher by the rector of the Hebrew University
2. 2001 Awarded first prize for Scientific Innovation (prize Kaye).
3. 2002 Epigenesis won the prize for the best incubator company in Jerusalem Incubators –Hitec-.
4. 2011 Awarded second prize by the Israeli Fertility Association.
5. 2012 Awarded a special distinction from the Colombian government through the Colombian President together with Fernando Botero, Rodolfo Llinas, Gabriel Garcia-Marquez and others.
6. 2017 Betalin awarded first prize best pharma start up in BioMed meeting. Israel.
7. 2017 Betalin awarded first prize best pharma start up amongst over 1500 companies pre-selected and competing in China.