CURRICULUM VITAE

**Jonathan H. Axelrod, Ph.D.**

Born 25 May 1956, Tucson, Arizona, USA

Citizen of USA and ISRAEL

Married, two children

## Positions and Employment

1994 –pres **Principal Investigator**, Goldyne Savad Institute for Gene Therapy, Hadassah University Hospital

1993-1998 **Research Scientist**, Dept. of Virology, Hebrew Univ. Hadassah Medical School, Jerusalem Israel

1993-1994 **Consultant** for Gene Therapy to Octapharma Medical Research Inst., Bnei Brak, Israel. (Currently Omrix, Kiryat Weizmann, Nes Ziona, Israel)

1992 **Manager of Research and Development**, Scopus Genetics (Israel) Ltd., 13 Rozanis St., Tel Aviv 61396, Israel

1978-1979 **Research Assistant** to Prof. Martinez Hewlett, Dept. of Cellular and Developmental Biology, Univ. of Arizona, Tucson, Arizona

# Education

1991-1992 Postdoctoral Fellow, Prof. Alexander Levitzki, Hebrew Univ. of Jerusalem

1987-1991 Postdoctoral Fellow, Prof. Inder M. Verma, The Salk Institute, La Jolla, CA.

1982-1987 Ph.D., Weizmann Institute of Science, Rehovot, Israel

1979-1982 M.Sc., Weizmann Institute of Science, Rehovot, Israel

1976-1978 B.A., Biochemistry, Pomona College, Claremont, CA., USA

**Awards and Honors**

- Award of High Distinction for M.Sc. Thesis, awarded by the Feinberg Graduate School

- EMBO Long Term Postdoctoral Fellow (1987-1989)

- Cystic Fibrosis Foundation Postdoctoral Fellow (1990)

- Lady Davis Postdoctoral Fellow (1991-1992)

**Invited Lectures in International Conferences:** Recent examples:

* April 2018, European Society for Radiotherapy and Oncology (ESTRO), Bacelona, Spain
* February 2017, Gordon Conference on Salivary Glands & Exocrine Biology, Galveston, Tx, USA
* May 2014, IL6 in Health and Disease International, Meeting on IL6, Kiel, Germany.

List of Publications

**Publish Articles in Journals:**

1. Anat Shriki, Tali Lanton, A Sonnenblick, O Levkovitch-Siany, D Eidelshtein, R Abramovitch, N Rosenberg, O Pappo, S Elgavish, Y Nevo, R Safadi, A Peled, S Rose-John, E Galun, **JH Axelrod**, *Multiple Roles of IL-6 in Hepatic Injury, Steatosis, and Senescence Aggregate to Suppress Tumorigenesis*, **Cancer Res**. 2021 Sep 15;81(18):4766-4777. doi: 10.1158/0008-5472.CAN-21-0321. Epub 2021 Jun 11.PMID: 34117031
2. Mohammad Zuaiter, **Jonathan H. Axelrod**, Galina Pizov, Ofer N. Gofrit, Hyper-Interleukin-6 Protects Against Renal Ischemic-Reperfusion Injury—A Mouse Model, **Front Surg.** 2021; 8: 605675. Published online 2021 May 13. doi: 10.3389/fsurg.2021.605675
3. Gamaev L, Mizrahi L, Friehmann T, Rosenberg N, Pappo O, Olam D, Zeira E, Halpern KB, Caruso S, Zucman-Rossi J, **Axelrod JH**, Galun E, and Goldenberg DS. *The pro-oncogenic effect of the lncRNA H19 in the development of chronic inflammation-mediated hepatocellular carcinoma*. **Oncogene**. 2021 Jan;40(1):127-139. doi: 10.1038/s41388-020-01513-7. Epub 2020 Oct 22.
4. Khatib A, Solaimuthu B, Ben Yosef M, Abu Rmaileh A, Tanna M, Oren G, Schlesinger Frisch M, **Axelrod JH**, Lichtenstein M, Shaul YD. *The glutathione peroxidase 8 (GPX8)/IL-6/STAT3 axis is essential in maintaining an aggressive breast cancer phenotype.* **Proceedings of the National Academy of Sciences**, 202010275; DOI: 10.1073/pnas.2010275117 (2020).
5. Chai, C., B. Cox, D. Yaish, D. Gross, N. Rosenberg, F. Amblard, Z. Shemuelian, M. Gefen, A. Korach, O. Tirosh, T. Lanton, H. Link, J. Tam, A. Permikov, G. Ozhan, J. Citrin, H. Liao, M. Tannous, M. Hahn, **J. Axelrod**, E. Arretxe, C. Alonso, I. Martinez-Arranz, P.O. Betes, R. Safadi, A. Salhab, J. Amer, Z. Tber, S. Mengshetti, H. Giladi, R.F. Schinazi, and E. Galun. *Agonist of RORA Attenuates Non-Alcoholic Fatty Liver Progression in Mice via Upregulation of microRNA 122*. **Gastroenterology**. S0016-5085(20)34726-0. doi:10.1053/j.gastro.2020.05.056 (2020).
6. Durlacher-Betzer, K., Hassan, A., Levi, R., **Axelrod, J.**, Silver, J., Naveh-Many, T., *Interleukin-6 contributes to the increase in fibroblast growth factor 23 expression in acute and chronic kidney disease*, **Kidney Int.**, (2018).
7. Moll JM, Wehmöller M, Frank NC, Homey L, Baran P, Garbers C, Lamertz L, **Axelrod JH**, Galun E, Mootz HD, Scheller J., *Split2 protein-ligation generates active IL-6-type Hyper-cytokines from inactive precursors*, **ACS Synth Biol.** 6:2260-2272 (2017).
8. Kleinschmidt D, Giannou AD, McGee HM, Kempski J, Steglich B, Huber FJ, Ernst TM, Shiri AM, Wegscheid C, Tasika E, Hübener P, Huber P, Bedke T, Steffens N, Agalioti T, Fuchs T, Noll J, Lotter H, Tiegs G, Lohse AW, **Axelrod JH**, Galun E, Flavell RA, Gagliani N, Huber S., *A Protective Function of IL-22BP in Ischemia Reperfusion and Acetaminophen-Induced Liver Injury*, **J Immunol.** 199:4078-4090 (2017).
9. Lanton T, Shriki A, Nechemia-Arbely Y, Abramovitch R, Levkovitch O, Adar R, Paldor M, Goldenberg D, Sonnenblick A, Peled A, Rose-John S, Galun E, and **Axelrod JH**, *IL6-Dependent Genomic Instability Heralds Accelerated Carcinogenesis Following Liver Regeneration on a Background of Chronic Hepatitis*, **Hepatology**, 65:1600-1611 (2017).
10. Y Marmary, R Adar, S Gaska, A Wygoda, A Maly, J Cohen, R Eliashar, L Mizrachi, C Orfaig-Geva, BJ Baum, S Rose-John, E Galun, **JH Axelrod**, *Radiation-Induced Loss of Salivary Gland Function Is Driven by Cellular Senescence and Prevented by IL6 Modulation.* **Cancer Res** 76, 1170-1180 (2016).
11. T Zahavi, T Lanton, MS Divon, A Salmon, T Peretz, E Galun, **JH Axelrod**, A Sonnenblick, *Sorafenib treatment during partial hepatectomy reduces tumorgenesis in an inflammation-associated liver cancer model*. **Oncotarget** 7, 4860-4870 (2016).
12. M Khamaisi, H Toukan, **JH Axelrod**, C Rosenberger, G Skarzinski, A Shina, R Meidan, R Koesters, S Rosen, G Walkinshaw, I Mimura, M Nangaku, SN Heyman, Endothelin-converting enzyme is a plausible target gene for hypoxia-inducible factor. **Kidney Int** 87, 761-770 (2015).
13. Z Milman, **JH Axelrod**, SN Heyman, N Nachmansson, R Abramovitch, Assessment with unenhanced MRI techniques of renal morphology and hemodynamic changes during acute kidney injury and chronic kidney disease in mice. **Am J Nephrol** 39, 268-278 (2014).
14. L Abu-Tair, **JH Axelrod**, S Doron, Y Ovadya, V Krizhanovsky, E Galun, J. Amer, R. Safadi, Natural killer cell-dependent anti-fibrotic pathway in liver injury via Toll-like receptor-9. **PLoS One** 8, e82571 (2013).
15. Barashi N, Weiss ID, Wald O, Wald H, Beider K, Abraham M, Klein S, Goldenberg D, **Axelrod J**, Pikarsky E, Abramovitch R, Zeira E, Galun E, Peled A. Inflammation-induced *hepatocellular carcinoma is dependent on CCR5 in mice.* **Hepatology** 58:1021-1030 (2013).
16. Nechemia-Arbely Y, Khamaisi M, Rosenberger C, Koesters R, Shina A, Geva C, Shriki A, Klaus S, Rosen S, Rose-John S, Galun E, **Axelrod JH§**, Heyman SN. *In vivo evidence suggesting reciprocal renal hypoxia-inducible factor-1 upregulation and signal transducer and activator of transcription 3 activation in response to hypoxic and non-hypoxic stimuli.* **Clin Exp Pharmacol Physiol** 40:262-272 (2013) (**§**co-corresponding author).
17. Milman Z, Heyman SN, Corchia N, Edrei Y, **Axelrod JH**, Rosenberger C, Tsarfati G, Abramovitch R. *Hemodynamic response magnetic resonance imaging: application for renal hemodynamic characterization.* **Nephrol Dial Transplant** 28; 1150-1156 (2013).
18. Sonnenblick A, Uziely B, Nechushtan H, Kadouri L, Galun E, **Axelrod JH**, Katz D, Daum H, Hamburger T, Maly B, Allweis TM, Peretz T. *Tumor STAT3 tyrosine phosphorylation status, as a predictor of benefit from adjuvant chemotherapy for breast cancer.* **Breast Cancer Res Treat** 138:407-413 (2013).
19. Sonnenblick A, Shriki A, Galun E, **Axelrod JH**, Daum H, Rottenberg Y, Hamburger T, Mali B, Peretz T. *Tissue microarray-based study of patients with lymph node-positive breast cancer shows tyrosine phosphorylation of signal transducer and activator of transcription 3 (tyrosine705-STAT3) is a marker of good prognosis*. **Clin Transl Oncol** 14:232-236 (2012).
20. Nechemia-Arbely Y., Shriki A., Denz U., Drucker C., Scheller J., Raub J., Pappo, O., Rose-John S., Galun E., **Axelrod JH** *Early Hepatocyte DNA Synthetic Response Posthepatectomy is Modulated by IL-6 Trans-Signaling and PI3K/AKT Activation*. **J Hepatol** 54: 922-9 (2011).
21. Drenger B., Ostovsky I.A., Barak M., Nechemia-Arbely Y., Ziv E., **Axelrod JH**. *Diabetes Blockade of Sevofluane Post-Conditioning is not Restored by Insulin in the Rat Heart: a p-STAT3 and PI3K-Mediated Inhibition* **Anesthesiology** 114: 1364-72 (2011).
22. Y. Nechemia-Arbely, D. Barkan, G. Pizov, A. Shriki, S. Rose-John, E. Galun, J. H. Axelrod, IL-6/IL-6R axis plays a critical role in acute kidney injury. *J Am Soc Nephrol* **19**, 1106-1115 (2008).

13. U. Arad, J. Axelrod, O. Ben-nun-Shaul, A. Oppenheim, E. Galun, Hepatitis B virus enhances transduction of human hepatocytes by SV40-based vectors. *J Hepatol* **40**, 520-526 (2004).

14. S. Sonza, H. P. Mutimer, K. O'Brien, P. Ellery, J. L. Howard, J. H. Axelrod, N. J. Deacon, S. M. Crowe, D. F. Purcell, Selectively reduced tat mRNA heralds the decline in productive human immunodeficiency virus type 1 infection in monocyte-derived macrophages. *J Virol* **76**, 12611-12621 (2002).

15. E. Galun, J. H. Axelrod, The role of cytokines in liver failure and regeneration: potential new molecular therapies. *Biochim Biophys Acta* **1592**, 345-358 (2002).

16. N. Hecht, O. Pappo, D. Shouval, S. Rose-John, E. Galun, J. H. Axelrod, Hyper-IL-6 gene therapy reverses fulminant hepatic failure. *Mol Ther* **3**, 683-687 (2001).

17. J. H. Axelrod, A. Honigman, A sensitive and versatile bioluminescence bioassay for HIV type 1 based on adenoviral vectors. *AIDS Res Hum Retroviruses* **15**, 759-767 (1999).

18. M. Baru, J. H. Axelrod, I. Nur, Liposome-encapsulated DNA-mediated gene transfer and synthesis of human factor IX in mice. *Gene* **161**, 143-150 (1995).

19. M. Roman, J. H. Axelrod, Y. Dai, R. K. Naviaux, T. Friedmann, I. M. Verma, Circulating human or canine factor IX from retrovirally transduced primary myoblasts and established myoblast cell lines grafted into murine skeletal muscle. *Somat Cell Mol Genet* **18**, 247-258 (1992).

20. R. Scharfmann, J. H. Axelrod, I. M. Verma, Long-term in vivo expression of retrovirus-mediated gene transfer in mouse fibroblast implants. *Proc Natl Acad Sci U S A* **88**, 4626-4630 (1991).

21. R. Miskin, J. H. Axelrod, A. E. Griep, E. Lee, D. Belin, J. D. Vassalli, H. Westphal, Human and murine urokinase cDNAs linked to the murine alpha A-crystallin promoter exhibit lens and non-lens expression in transgenic mice. *Eur J Biochem* **190**, 31-38 (1990).

22. J. H. Axelrod, M. S. Read, K. M. Brinkhous, I. M. Verma, Phenotypic correction of factor IX deficiency in skin fibroblasts of hemophilic dogs. *Proc Natl Acad Sci U S A* **87**, 5173-5177 (1990).

23. J. H. Axelrod, R. Reich, R. Miskin, Expression of human recombinant plasminogen activators enhances invasion and experimental metastasis of H-ras-transformed NIH 3T3 cells. *Mol Cell Biol* **9**, 2133-2141 (1989).

24. N. Rotem, J. H. Axelrod, R. Miskin, Induction of urokinase-type plasminogen activator by UV light in human fetal fibroblasts is mediated through a UV-induced secreted protein. *Mol Cell Biol* **7**, 622-631 (1987).

25. M. J. Hewlett, J. H. Axelrod, N. Antinoro, R. Feld, Isolation and preliminary characterization of temperature-sensitive mutants of poliovirus type 1. *J Virol* **41**, 1089-1094 (1982).

**Patents:**

1. *Methods for the Treatment of Renal Failure.* Inventors: **Jonathan H. Axelrod**, Daniel Barkan, Yael Nehemia, Eithan Galun, and Stefan Rose-John, US 2010/0135952 A1, Jun. 3, 2010.
2. *Methods for the Treatment of Radiation or Chemotherapy-Induced Tissue Damage*, Inventors: **Jonathan H. Axelrod**, Eithan Galun, Stefan Rose-John, and Yitzhak Marmary, US 2011/0184220 A1, Jul. 28, 2011.