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Personal Details

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Higher Education

	Period of Study		Name of Institution and Department	Degree
	1983-1987		Hebrew University, Department of Nursing	BA
	1991-1994		Technion – Israel Institute of Technology, Faculty of Medicine	MA
	1995-1998		Technion – Israel Institute of Technology, Faculty of Medicine	PhD

Post-Doctoral Studies

Period of Study	Name of Institution and Department/Lab	Name of Host
1998-1999	Johns Hopkins University, School of Hygiene and Public Health, Department of Health Policy and Management)	Prof. Barbara Curbow

Review of Articles for Refereed Journals (Impact factor relate to current score)

Dates	Journal
2004 - present	<i>Journal of Pain</i>
2005- 2010	<i>Anesthesiology</i>
2006 - present	<i>PAIN</i>
2005 - 2018	<i>Clinical Journal of Pain</i>

Dates	Journal
2006	<i>Journal of Oral Rehabilitation</i>
2007	<i>Social Science and Medicine</i>
2007	<i>Western Journal of Nursing Research</i>
2007	<i>American Journal of Obstetrics and Gynecology</i>
2009- 2018	<i>European Journal of Pain</i>
2009-2010	<i>Journal of Psychosomatic Research</i>
2010	<i>International Journal of Gynecology and Obstetrics</i>
*2011	<i>Journal of Sex Research</i>
*2011	<i>European Journal of Neuroscience</i>
*2011	<i>Neurotherapeutics</i>
*2012	<i>Cardiology</i>
*2013	<i>Contemporary Clinical Trials</i>
*2013	<i>Pain Medicine</i>
*2013-2016	<i>PLOS ONE</i>
*2013-2015	<i>Pain Practice</i>
*2015	<i>Mediators of Inflammation</i>
*2015-2016	<i>Journal of Women's Health, Issues & Care</i>
*2016- present	<i>Pain Reports</i>
*2017	<i>Neuroscience</i>
*2017	<i>Pain Research and Management</i>
*2018	<i>International Journal of Cognitive Therapy</i>

Membership in Professional Associations

Dates	Association
2001 – Present	The International Association for the Study of Pain.
2001 – Present	Israel Pain Association
2002 – 2005	The International Pelvic Pain Association
2003 – 2010	Directory member of The Israeli Nursing Research Association
2006- present	OFEK – The Israel Association for the Study of Group and Organizational Processes
2009- Present	Member in the Israeli Association for Palliative Care
*2018- Present	Member in the Israeli Association of Group Analysis

Participation in Scholarly Conferences

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
1992	American Diabetes Association 52 nd Annual meeting.	San Antonio, Texas	The reaction to early glucose administration of young NOD mice	Poster
1994	Workshop of European Nursing Research	Oslo, Norway	The Meaning of Pregnancy and Delivery Among Ethiopian Women in Israel	Oral presentation
1994	4 th International congress of the Israel Pain Association	Tel Aviv, Israel	Nurses and Pain – the Need for Education	Oral presentation

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
1995	International Nursing Congress "Quality in Nursing Realities and Visions"	Athens, Greece	Nursing and Pain Knowledge Improvement with Education	Oral presentation
1997	14 th International congress of EEG and Clinical Neurophysiology	Florence, Italy	Latency of laser pain evoked potentials in pain assessment	Poster
2001	European Congress on Current Treatment of: Acute, Chronic and Cancer Pain	Lugano, Switzerland	Augmentation of Systemic Pain Perception in Vulvar Vestibulitis Syndrome	Oral presentation
2002	The International Pelvic Pain Society 9 th Scientific meeting on Chronic Pelvic Pain	California, USA	Pain perception, autonomic response in women with Primary and Secondary VVS	Oral presentation
2002	International Association of the Study of Pain, 10 th World Congress on Pain	California, USA	Pain perception, autonomic response to pain and anxiety in women with Vulvar Vestibulitis syndrome	Poster
2004	International Congress on Regional Anesthesia and Pain Medicine	Delhi, India	Quantitative sensory testing: Application in treatment of sensory and pain disorders	Oral presentation
2004	The International Pelvic Pain Society 11 th Scientific Meeting on Chronic Pelvic Pain	Chicago, Illinois USA	Psychological Factors Associated with Enhanced Perception of Experimental Pain in Vulvar Vestibulitis Syndrome	Poster
2005	International Association of the Study of Pain, 11 th World Congress on Pain	Sydney, Australia	Decreased perception of noxious stimuli in patients with painless myocardial ischemia	Poster
2006	American Pain Society The 5 th Congress	San-Antonio, Texas USA	Prediction of post-operative pain by Psychophysical methods	Oral presentation Invited speaker
2006	5 th congress of the European Federation of the IASP	Istanbul, Turkey	Enhanced Diffuse Noxious Inhibitory Control (DNIC) in Males Does Not Depend on the Modality of Conditioning Stimulus	Poster

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
2008	International Association of the Study of Pain, 12 th World Congress on Pain	Glasgow, Scotland	Pre-pain assessment of inhibitory and facilitatory pain modulation profile in prediction of post-operative chronic pain	Poster
2009	The European Anesthesiology Congress	Milano, Italy	Quantitative Sensory Testing and Gynecological pain –	Oral presentation Invited speaker
2009	6 th Congress of the Europe Federation. Pain in Europe 4	Lisbon, Portugal	What can we learn from psychophysical testing about the pathological mechanisms of vulvodynia	Oral presentation Invited speaker
2010	37 th Nordic Congress of Obstetrics and Gynecology	Copenhagen Denmark	Psychological factors with perception of pain in th vulvodynia	Oral Presentation Invited speaker
2011	7 th Congress of the Europe Federation. Pain in Europe 4	Hamburg, Germany	Attachment styles, pain response and pain catastrophizing among sexual abuse women	Poster
2011	7 th Congress of the Europe Federation. Pain in Europe 4	Hamburg, Germany	Less-efficient of pain inhibition pathways characterized patients with peripheral diabetes neuropathy	Poster
*2013	8 th Congress of the Europe Federation. Pain in Europe 4	Florence, Italy	The Role of Pain Modulation in Predicting Patient Delay in Seeking Medical Help in Acute Myocardial Infarction.	Poster
*2015	9 th Congress of the European Pain Federation EFIC	Vienna, Austria	Cardiac nociception: How do pain modulation profile and personality affect pain experience and delay in seeking medical help	Topical Seminar: Chair Invited speaker Oral presentation
*2016	IASP 16th World Congress on Pain	Yokohama, Japan	Hypertension-Associated Hypoalgesia in Myocardial Infarction Patients	Poster
*2019 forthcoming October	International Conference in Nursing	Rome, Italy	Concordance between actual treatment and patient preferred-administration-route improve analgesic response: The possible role of placebo mechanisms	Oral Presentation

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
*2019 forthcoming September	11 th Congress of the European Pain Federation EFIC	Valencia, Spain	Pain Sensitivity Mediates the Link Between Catastrophizing and Mild Traumatic Brain Injury Head Pain Following Motor Vehicle Collision	Poster
*2019 forthcoming	Health international session at Pflegekongress – Nursing Congress	Vienna Austria	The role of nurses in the encounter with chronic pelvic pain patients: The involvement of cognitive and psycho-sexual features in pain	Keynote Speaker
*2020 forthcoming		Paris France	Understanding the Variability of Vulvar Pain Manifestation: The manifestation of neuropathic pain symptoms in Provoked Vestibulodynia	Keynote Speaker

Invited Lectures (*selected*)

Date	Place of Lecture	Name of Forum	Presentation/Comments
2007	Geneva, Switzerland	University Hospitals and School of Medicine, Department of Anesthesiology	Prediction of post-operative pain by early QST measurements
2008	Sha'ar Menashe Mental Health Center Israel	Journal Club	The association between mental disorders and altered pain perception and modulation
2008	Nursing Department Tel-Aviv University	Department seminar	The role of experimental pain in the assessment of pain modulation – application for chronic pain
2009	OBGYN Department, Hadassah, Jerusalem	Journal club	What can we learn from experimental pain about Gynecological pain?
2009	OBGYN Department, Bikur Holim Hospital, Jerusalem	Department seminar	The role of psychophysical assessment in the understanding of vulvar pain disorders
*2013	The Institute for Pain Medicine, Haifa	Pain course for clinicians	The effect of pain catastrophizing on pain perception and response
*2015	The Institute for Pain Medicine, Haifa	Pain course for clinicians	Role of Gender in pain perception and modulation
*2017	The Institute for Pain Medicine, Haifa	Pain course for clinicians	Chronic pelvic pain disorders
*2019	Rupin College	The Pain Conference of the Nursing Department	Pain related personality factors and their effect on pain modulation profile

Invited Colloquium Talks (selected)

Date	Place of Lecture	Name of Forum	Presentation/Comments
2007	The Multidisciplinary Treatment Center for Victims of Sexual Abuse, Bnai-Zion Medical Center, Haifa, Israel	Staff meeting	The transition from trauma to chronic pain
2008	'Clalit' Health Services, Haifa, Israel	Course: pain management for registered nurses	The approach for experimental induced pain – application for pain assessment
2009	The Multidisciplinary Treatment Center for Victims of Sexual Abuse, Bnai-Zion Medical Center, Haifa, Israel	Course for social workers who treat victims of sexual abuse	Mechanism associated with the transition to chronic pelvic pain among victims of sexual abuse
2011	The Multidisciplinary Treatment Center for Victims of Sexual Abuse, Bnai-Zion Medical Center, Haifa, Israel	Advanced course for therapists for victims of physical and sexual abuse	The role of cognitive, psychophysical and emotional aspects in the mechanisms of pelvic pain disorders
*2013	Tel Aviv University, Faculty of Medicine, Tel Aviv, Israel	Advanced course: gender medicine	Gender differences in pain perception
*2014	Hôpital Ambroise Paré Centre d'Evaluation et de Traitement de la Douleur Paris, France	Pathophysiology and Clinical Pharmacology of Pain	Pain Modulation Profile in Predicting Patient Delay in Seeking Medical Help in Acute Myocardial Infarction
*2016	Columbia University, New York, USA	CUMC: The Center of Precision Medicine in Anesthesiology	The role of QST in the Prediction of Patient Delay in Seeking Medical Help in Acute Myocardial Infarction
*2018	Psychiatric Department Rambam HealthCare Campus, Haifa, Israel	Journal Club	How can we reveal the mechanisms of pain functioning using QST

Research Grants

	Role in Research	Other Researchers	Topic	Funded by (C= Competitive Fund)	Amount	Year
1.	PI		Characteristics of systemic pain perception in women	C Director of Science, Ministry of Health	\$5,000 For one year	1995

	Role in Research	Other Researchers	Topic	Funded by (C=Competitive Fund)	Amount	Year
2.	CI	Prof. A. Drach-Zahavy and Prof. A. Somech, PI's, and Prof. A. Spitzer, CI	New management and coordination roles in nursing	C The Israel National Institute for Health Policy and Health Services Research	NIS 80,000	2001
3.	Co-PI	Prof. D. Yarnitsky CO-PI	Advancement of psychophysics of pain modulation from lab to clinic: Constructing susceptibility profile for appearance of post-operative neuropathic pain	C Israel Science Foundation (ISF)	\$220,000 For three years	2005
4.	Co-PI	Prof. D. Yarnitsky CO-PI	Mechanism-based choice of therapy for neuropathic pain: Can treatments' success in neuropathic post-operative pain be coupled to a psychophysical pain modulation	C Israel Science Foundation (ISF)	\$120,000 For four years	2008

	Role in Research	Other Researchers	Topic	Funded by (C= Competitive Fund)	Amount	Year
5.	*Co-PI	Dr. Yelena Granovsky CO-PI and Prof. D. Yarnitsky PI	Prediction of migraine prevention efficacy: Individualization of treatment by coupling drug's mode of action with patient's mechanism of pain modulation	C Migraine Research Foundation (MRF)	\$50,000	2014
6.	*Co-PI	Prof. D. Yarnitsky PI Prof. Maixner Prof. Diatchenko Prof. Apkarian Prof. Sterling PIs	Research to determine acute pain impact on the development of chronic pain	C DOD – US Ministry of Defense See comment below	\$1,500,000	2014

Professional Degrees

Date	Degree
1987	Qualified Registered Nurse
1988	Qualified Registered Midwife - License No. 544
2004	Qualified Group Supervisor
*2012-2014	The Program in Organizational Consultation & Development: A Psychoanalytic – Systemic Approach
*2014- 2018	Israeli Institute of Group Analysis, Training Program for Group Analysts

Articles in Refereed Journals -

Articles in Refereed Journals

1. **Granot, M.**, Perelman, R., Sprecher, E., Tenenbaum, G., Barzily, D., & Vardi, P. (1994). The role of beta cell maturity in the development of type I Diabetes Mellitus. *Israeli Journal of Medical Science*, 30, 22-25
2. Ravid, C., Spitzer, A., Tamir, B., **Granot, M.**, & Noam, R. (1995). Internal body perceptions of Ethiopian Jews who immigrated to Israel. *Western Journal of Nursing Research*, 17, 630-646. doi.org/10.1177/019394599501700605

3. Spitzer, A., Kesselring, A., Ravid, C., Tamir, B., **Granot, M.**, & Noam, R. (1996). Learning about another culture: Project and curricular reflections. *Journal of Nursing Education*, *35*, 322-328. doi.org/10.3928/0148-4834-19961001-09
4. **Granot, M.**, Spitzer, A., Aroian, J.K., Ravid, C., Tamir, B., & Noam, R. (1996). Pregnancy and delivery practice and beliefs of Ethiopian Immigrant women in Israel. *Western Journal of Nursing Research*, *18*, 299-312. doi.org/10.1177/019394599601800306
5. Eisenberg, E., & **Granot, M.** (1998). Education for care givers in pain: Do the right thing right. *Pain Clinic*, *10*, 245-252.
6. **Granot, M.**, Yarnitsky, D., Itzkovits-Eldor, J., Granovsky, Y., Peer, E., & Zimmer, E. Z. (2001). Pain perception in women with dysmenorrhea. *Obstetrics & Gynecology*, *98*, 407-411. doi.org/10.1016/S0029-7844(01)01465-X
7. **Granot, M.**, Buskila, D., Granovsky, Y., Sprecher, E., Neumann, L., & Yarintsky, D. (2001). Simultaneous recording of late and ultra-late pain evoked potentials in Fibromyalgia. *Clinical Neurophysiology*, *112*, 1881-1887. doi.org/10.1016/S1388-2457(01)00646-0
8. **Granot, M.**, Friedman, M., Yarnitsky, D., & Zimmer E.Z. (2002). Enhancement of the perception of systemic pain in women with vulvar vestibulitis. *BJOG: An International Journal of Obstetrics and Gynaecology*, *109* (8), 863-866. doi.org/10.1111/j.1471-0528.2002.01416.x
9. **Granot, M.**, Lowenstein, L., Yarnitsky, D., & Zimmer, E.Z. (2003). Postcesarean section pain prediction by preoperative experimental pain assessment. *Anesthesiology*, *98*, 1422-1426. *This paper has been acknowledged by an editorial review*
10. **Granot, M.**, Sprecher, E., & Yarnitsky, D. (2003). Psychophysics of phasic and tonic heat pain stimuli by quantitative sensory testing in healthy subjects. *European Journal of Pain*, *7*, 139-143. doi.org/10.1016/S1090-3801(02)00087-3
11. Bowie, J., Sydnor Dobson, K., & **Granot, M.** (2003). Spirituality and care of prostate cancer patients: A Pilot Study. *Journal of the National Medical Association*, *95*, 951-954.
12. Drach-Zahavy, A., Somech, A., **Granot, M.**, & Spitzer, A. (2004). Can we win them all? Benefits and costs of structured and flexible innovation-implementations. *Journal of Organizational Behavior*, *25*, 217-234. doi.org/10.1002/job.239
13. **Granot, M.**, Goldstein-Ferber, S., & Azzam, Z. (2004). Gender differences in the perception of chest pain. *Journal of Pain and Symptom Management*, *27*, 149-155. doi.org/10.1016/j.jpainsymman.2003.05.009]
14. Lowenstein, L., Vardi, Y., Deutsch, M., Fridman, M., Gruenwald, I., **Granot, M.**, Sprecher, E., & Yarnitsky, D. (2004). Vulvar vestibulitis severity – assessment by sensory and pain testing modalities. *Pain*, *107*, 47-53. doi.org/10.1016/j.pain.2003.09.012
15. **Granot, M.**, Friedman, M., Yarnitsky, D., Tamir, A., & Zimmer, E. Z. (2004). Primary and Secondary Vulvar Vestibulitis Syndrome: Systemic pain perception and psychophysical characteristics. *American Journal of Obstetrics and Gynecology*, *191*, 138-142. /doi.org/10.1016/j.ajog.2003.09.060
16. **Granot, M.**, Zimmer, E.Z., Friedman, M., Lowenstein, L., & Yarnitsky, D. (2004). Association between quantitative sensory testing, treatment choice and subsequent pain reduction in Vulvar Vestibulitis Syndrome. *Journal of Pain*, *5*, 226-232. doi.org/10.1016/j.jpain.2004.03.005
17. Baron-Epel, O., **Granot, M.**, Badarna, S., & Avrami, S. (2004). Perceptions of breast cancer among Arab Israeli women. *Women & Health*, *40*, 101-116. doi.org/10.1300/J013v40n02_07
18. Bowie, J. V., Sydnor, K. D., **Granot, M.**, & Pargament, K. L. (2004). Spirituality and coping among survivors of prostate cancer. *Journal of Psychosocial Oncology*, *22*, 41-56. doi.org/10.1300/J077v22n02_03
19. **Granot, M.**, & Lavee, Y. (2005). Psychological factors associated with perception of experimental pain in Vulvar Vestibulitis Syndrome. *Journal of Sex and Marital Therapy*, *31*, 285-302. doi.org/10.1080/00926230590950208] .

20. Goldstein-Ferber, S., **Granot, M.**, & Zimmer, E.Z. (2005). Catastrophizing labor pain compromises later maternity adjustments. *American Journal of Obstetrics and Gynecology*, *192*, (3) 826-831. doi.org/10.1016/j.ajog.2004.10.589]
21. **Granot, M.** (2005). Personality traits associated with perception of noxious stimuli in women with Vulvar Vestibulitis Syndrome. *Journal of Pain*, *6*, 168-173. doi.org/10.1016/j.jpain.2004.11.010
22. **Granot, M.**, & Nagler, R. (2005). Association between regional idiopathic neuropathy and salivary involvement as the possible mechanism for oral sensorial complaints. *Journal of Pain*, *6*, 581-587. doi.org/10.1016/j.jpain.2005.03.010
23. **Granot, M.**, & Goldstein-Ferber, S. (2005). The roles of pain catastrophizing and anxiety in the prediction of post-operative pain intensity: A prospective study. *Clinical Journal of Pain*, *21*, 439-445. doi: 10.1097/01.ajp.0000135236.12705.2d []
24. Goldblatt, H., & **Granot, M.** (2005). Domestic violence among Druze women in Israel as reflected by health status and somatization level. *Women & Health*, *42*(3), 19-36. doi.org/10.1300/J013v42n03_02
25. Goldstein-Ferber, S., & **Granot, M.** (2006). The Association between Somatization and Perceived Ability: Roles in dysmenorrhea among Israeli Arab adolescents. *Psychosomatic Medicine*, *68*, 136-142. doi: 10.1097/01.psy.0000197644.95292.00
26. Lowenstein, L., **Granot, M.**, Tamir, A., Glik, A., Deutsch, M., Jakobi, P., & Zimmer, E.Z. (2006). Efficacy of suppository analgesia in postabortion pain reduction. *Contraception*, *74*, 345-348. doi.org/10.1016/j.contraception.2006.03.020
27. **Granot, M.**, Granovsky, Y., Sprecher, E., Nir, R.R., & Yarnitsky, D. (2006). Contact heat-evoked temporal summation: Tonic versus repetitive-phasic stimulation. *Pain*, *122*, 295-305. doi.org/10.1016/j.pain.2006.02.003
28. # Strulov, L., Zimmer, E.Z., **Granot, M.**, Tamir, A., Jakobi, P., & Lowenstein, L. (2007). Pain catastrophizing, response to experimental heat stimuli, and post-cesarean section pain. *Journal of Pain*, *8*, 273-279. doi.org/10.1016/j.jpain.2006.09.004
29. **Granot, M.**, Khoury, R., Berger, G., Krivoy, N., Braun, E., Aronson, D., & Azzam, Z.S. (2007). Clinical and experimental pain perception is attenuated in patients with painless myocardial infarction. *Pain*, *133*, 120-127. doi.org/10.1016/j.pain.2007.03.017]
30. Granovsky, Y., **Granot, M.**, Nir, R.R., & Yarnitsky, D. (2008). Objective correlate of subjective pain perception by contact heat evoked potentials. *Journal of Pain*, *9*(1), 53-63. doi.org/10.1016/j.jpain.2007.08.010 [IF =3.387, 33/156
31. **Granot, M.**, Weissman-Fogel, I., Crispel, Y., Pud, D., Granovsky, Y., Sprecher, E., & Yarnitsky, D. (2008). Determinants of endogenous analgesia magnitude in a diffuse noxious inhibitory control (DNIC) paradigm: Do conditioning stimulus painfulness, gender and personality variables matter? *Pain*, *136*(1-2), 142-149. doi.org/10.1016/j.pain.2007.06.029
32. Yarnitsky, D., Crispel, Y., Eisenberg, E., Granovsky, Y., Ben-Nun, A., Sprecher, E., Best, L.A., & **Granot, M.** (2008). Prediction of chronic post-operative pain: pre-operative DNIC testing identifies patients at risk. *Pain*, *15*, *138*(1), 22-28. doi.org/10.1016/j.pain.2007.10.033
33. Goldblatt, H., **Granot, M.**, Admi, H., & Drach-Zahavi, A. (2008). The experience of being a shift manager in a hospital ward. *Journal of Advanced Nursing*, *63*, 45-53. doi.org/10.1111/j.1365-2648.2008.04650.
34. Weissman-Fogel, I., Granovsky, Y., Crispel, Y., Ben-Nun A., Yarnitsky, D., & **Granot, M.** (2009). Enhanced pre-surgical pain temporal summation response predicts post-thoracotomy pain intensity during the acute postoperative phase. *Journal of Pain*, *10*, 628-636. doi.org/10.1016/j.jpain.2008.12.009
35. **Granot, M.** (2009). Can we predict persistent postoperative pain by testing preoperative experimental pain? Review article. *Current Opinion in Anesthesiology*, *22*, 425-430. doi: 10.1097/ACO.0b013e32832a40e1

36. van Lankveld, J.D.M., **Granot, M.**, Weijmar Schultz, W. C. M., Binik, Y. M., Wesselmann, U., Pukall, C. F., Bohm-Starke, N., & Ahtari, C. (2010). Women's sexual pain disorders. *Journal of Sexual Medicine*, 7(1 Pt 2), 615-631. doi.org/10.1111/j.1743-6109.2009.01631.x
37. Landau, R., Kraft, J. C., Flint, L. Y., Carvalho, B., Richebé, P., Cardoso, M., Lavand'homme, P., **Granot, M.**, Yarnitsky, D., & Cahana, A. (2010). An experimental paradigm for the prediction of Post-Operative Pain (PPOP). *Journal of Visualized Experiments*, 27(35), 1671. doi: 10.3791/1671
38. Halpern, O., Raz, I., Ben-Gal, L., Weizman, Z., Or-Chen, K., & **Granot, M.** (2010). Prediction of perineal trauma during childbirth by assessment of Striae Gravidarum Score. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 39, 292-297. doi.org/10.1111/j.1552-6909.2010.01137.x
39. Yarnitsky, D., Arendt-Nielsen, L., Bouhassira, D., Edwards, R. R., Fillingim, B. R., **Granot M.**, Hansson, P., Lautenbacher, S., Marchand, S., & Wilder-Smith, O. (2010). Conditioned Pain Modulation (CPM): Recommendations on terminology and practice of psychophysical DNIC testing. *European Journal of Pain*, 14(4), 339. doi.org/10.1016/j.ejpain.2010.02.004
40. Nisenblat, V., Engel-Eger, B., Ohel, G., & **Granot, M.** (2010). The association between supra-physiological levels of Estradiol and response pattern to experimental pain. *European Journal of Pain*, 14, 840-846. doi.org/10.1016/j.ejpain.2010.01.002
41. **Granot, M.**, Zisman, Y., Ram, E., Goldstick, O., & Yovell, Y. (2011). Characteristics of attachment style in women with dyspareunia. *Journal of Sex and Marital Therapy*, 37, 1-16. doi.org/10.1080/0092623X.2011.533563
42. Nir, R.R., Granovsky, Y., Yarnitsky, D., Sprecher E., & **Granot, M.** (2011). A psychophysical study of endogenous analgesia: The role of the conditioning pain in the induction and magnitude of conditioned pain modulation. *European Journal of Pain*, 15, 491-497. doi.org/10.1016/j.ejpain.2010.10.001
43. **Granot, M.**, Somer, S., Zisman-Ilani, Y., Beny, A., Sadger, R., Mirkin, R., Moont, R., & Yovell, Y. (2011). Characteristics of response to experimental pain in sexually abused women. *Clinical Journal of Pain*, 27, 616-622. doi:10.1097/AJP.0b013e3182132963]
44. Drach-Zahavi, A., Goldblatt, H., **Granot, M.**, Hirshmann, S., & Kostinsky, H. (2011). Control: Patients' Aggression in Psychiatric Settings. *Qualitative Health Research*, 21, 43-53. doi.org/10.1177/1049732311414730
45. **Granot, M.**, & Wisman-Fogel, I. (2012). The effect of post-surgical neuroplasticity on the stability of systemic pain perception: a psychophysical study. *European Journal of Pain*, 16(2), 247-55. doi.org/10.1016/j.ejpain.2011.07.003
46. Nir, R. R., Yarnitsky, D., Honigman, L., & **Granot M.** (2012). Conditioned Pain Modulation is Reduced due to a Placebo Effect which Decreases the Subjective Perception of the Conditioning Stimulation. *Pain*, 153(1), 170-176. doi.org/10.1016/S1754-3207(11)70377-7]
47. Yarnitsky, D., **Granot, M.**, Nahman-Averbuch, H., Khamaisi, M., & Granovsky, Y. (2012). Conditioned pain modulation predicts efficacy of duloxetine in painful diabetic neuropathy. *Pain*, 154(6), 1193-1198. doi.org/10.1016/j.pain.2012.02.021
48. Ortner, C. M., **Granot, M.**, Richebe, P., Cardoso, M., Bollag, L., & Landau, R. (2013). Preoperative Scar Hyperalgesia and Post-operative Pain in Women Undergoing Repeat Cesarean Delivery. *European Journal of Pain*, 17(1), 111-123. doi.org/10.1002/j.1532-2149.2012.00171.x
49. Wilson, H., Carvalho, B., **Granot, M.**, & Landau, R. (2013). Evaluation of the temporal stability of conditioned pain modulation in healthy women over four menstrual cycles at the follicular and luteal phases. *Pain*, 154 (12), 2633-2638. doi.org/10.1016/j.pain.2013.06.038
50. Afanasiev, S., Aharon, Y., & **Granot M.** (2013). Personality type as a predictor for depressive symptoms and reduction in quality of life among stroke survivors. *American Journal of Geriatric Psychiatry*, 21(9), 832-839. doi.org/10.1016/j.jagp.2013.04.012
51. Nahman-Averbuch, H., Yarnitsky, D., Granovsky, Y., Gerber, E., Dagul, P., & **Granot, M.** (2013). The effect of psychophysical parameters on the conditioned pain modulation response.

- Scandinavian Journal of Pain*, 4(1), 10-14. doi.org/10.1016/j.sjpain.2012.08.001
52. Kremer, R., **Granot, M.**, Yarnitsky, D., Crispel, Y., Fadel, S., Best, L., & Nir, R. R. (2013). The Role of Pain Catastrophizing in the Prediction of Acute and Chronic Postoperative Pain. *The Open Pain Journal*, 6, 176-182. doi: 10.2174/1876386301306010176
53. Yarnitsky, D., **Granot, M.**, & Granovsky, Y. (2014). Pain modulation profile and pain therapy: Between pro- and antinociception. *Pain*, 155(4), 663-665. doi: 10.1016/j.pain.2013.11.005
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Summary of my Activities and Future Plans

The topics of pain modulation processes, women's health, and their interplay are the backbone of my research activities. My focus on these fields has been articulated in several domains:

Etiology, mechanism, and expression of pain modulation processes is the main focus of my academic research program. Given that pain represents a multifaceted and complex phenomenon, encompassing physical, personal, and cognitive features, its assessment by quantitative and objective tools is a great challenge. Therefore, I have devoted part of my laboratory work to the conceptualization of a model that depicts the variability of pain experience and the plasticity of the nociceptive system.

Experimental-induced pain tests mirrors inhibitory and facilitatory pain modulation pathways as well as brain activity, which involves the individual perception and response to pain. In order to gain insight into this domain, I take part in research projects that aim to evaluate and quantify mechanisms involved with normal, as well as altered, pain modulation responses. As a member of the Haifa Pain Group at the Laboratory of Clinical Neurophysiology, Rambam Health Care Campus, I collaborate on projects that aim to promote transformational "lab to clinic" studies, encompassing mechanism-based tests that represent pain perception and modulation processing. The science of pain psychophysics enables an in-depth examination of the interrelations between pain modulation patterns of individuals and their clinical pain behavior. In addition, I explore the assessment of brain

processes during painful events, such as pain-evoked potentials, as well as the autonomic and cognitive aspects of pain. In this way, I am able to elucidate underlying processes that are involved in response to pain treatment and the development of pain disorders.

As a pain researcher, I have developed and applied pain-psychophysical paradigms aimed to model in the laboratory setting nociceptive mechanisms that determine the individual's pain sensitivity. Such advanced psychophysical and neurophysiological approaches enable clinicians and researchers to understand and assess the functioning of facilitatory and inhibitory pain modulation pathways. To the end, we are exploring how parameters of pain modulation, representing a broad view of an individual's pain as obtained in early acute pain patients, can explain one's risk to develop chronic pain. My project encompasses neurophysiological, psychophysical, genetic, psychological, and clinical evaluations. I have been collaborating for many years with the PI and project leader, Prof. David Yarnitsky, at the Technion's Clinical Neurophysiology Lab. My primary contribution is the synthesis of advanced pain psychophysics paradigms, representing the nociceptive mechanisms involved in pain processing, as well as in pain-related personality assessment. These represent cognitive-emotional and personal features that affect the pain experience. I collaborate with well-known key experts in the fields of pain. For example, Prof. Maixner who established the large-scale genome-wide association studies (GWAS) in pain, Prof. Apkarian, who focus on brain imaging, and Prof. Sterling, who is considered as one of the leading researcher in the field of pain and disability is also consulting on the project.

An additional collaboration that has been running for six years focuses on pain variability and modulation in the setting of obstetrics and gynecology, via the model of pregnancy and post-surgical pain. This multi-center project is led by Prof. Ruth Landau, MD, from the University of Columbia, NY, who is an expert in pain anesthesiology and genetics. The project took place in the University of Washington, Seattle, WA, led by Dr. Ortner from the Department of Anesthesiology and Pain Medicine, and Dr. Cardoso from the Maternity Hospital, Santa Joana, Sao Paulo, Brazil as well as the Department of Anesthesiology, Perioperative and Pain, Stanford University Medical Center, CA. Our research projects encompass advanced psychophysical tests, together with genetic and clinical measures as well as psychological evaluation, to explore pain manifestation in the gynecological setting, mainly following surgery (D48, D49, D58). My robust clinical background aids my understanding of the complexity of pain that results in inadequate analgesic response to traditional treatments for pain. Based on the assumption that various pathophysiological mechanisms are involved in the development as well as in the clinical manifestations of pain,

experimental-induced pain provides insights into the pain matrix, which is comprised of the cognitive representation, neuronal network and connectivity, and emotional status. All these internal elements are affected by the external social and physical environment.

Personalized pain medicine. I merge theoretical knowledge with current clinical issues and practices that require a multidimensional investigation approach. Such exploration of the nociceptive system, as performed in the experimental setting, can promote personalized medicine, based on the individual's pathogenesis and needs. My research ranges from investigating chronic pain syndromes (e.g., chronic pelvic pain, see publications D62, D64, D66), to predicting alterations in pain modulation (e.g., chronic pain following surgery (see publications D32, D34, D46, D49, D53), or altered pain perception in patients with silent ischemic heart diseases (see, for example, publications D55, D68). These diverse studies contain the potential to enable pain clinicians to create evidence-based guidelines for the management of chronic pain conditions, based on individually-tailored pain mechanisms.

The notion of promoting personalized pain medicine in order to improve pain treatment outcomes (see, for example, publication D49) and quality of life is a theme, which runs through most of my research. In the future, I hope to advance this topic of increasing importance by multidisciplinary research activity via the Cheryl Spencer Research Institute. I plan to develop a sub-discipline program of symptom management across health science disciplines and health care settings, as well as coordinate domestic and international research projects.

Women's health and pain disorders - Beyond my broad interest in the study of pain I have developed a more specific locus of attention—women's health—most likely stemming from my past experience as a midwife. I am especially interested in women's pain disorders and the mechanisms in which the ovarian hormones modulate pain processing. Within this broad field, I focus on the effects of cognitive, cultural, and pain-related personality variables on pain manifestation as well as on health outcomes and response to pain interventions (see publications D54, D57, D58, D66). As such, I co-authored a chapter on female sexual pain disorders in the book: "*Sexual medicine: Sexual dysfunctions in Men and Women*" (see publication E2), which provides evidence-based guidelines to diagnose and treat women who suffer from dyspareunia. The topic of women's health in the context of pelvic and vulvar pain disorders has been recently emphasized in the publication (publication K3). Additionally, I collaborate with a multi-center international research group (from Columbia University, NY), attempting to reveal

the mechanisms involved in pain plasticity and to predict pain following Cesarean section on the basis of psychophysical detection of the pain modulation system, genetic factors, and personality variables (see publications D49, D50). The ultimate goal of this project is to provide optimal pain relief during and after gynecological surgery, by offering individualized treatment to women who appear to be more susceptible to post-operative pain.

Women who suffered from sexual abuse. A somewhat different engagement with women's pain is my educational and research activity in the Multidisciplinary Treatment Center for Victims of Sexual Abuse and the clinic for women with Provoked Vestibulodynia Disorder (PVD). Women with a history of severe sexual abuse appear to express somatization, pain dissociation and self-mutilation behavior or enhancement of pain sensitivity. I wish to contribute to this field by investigating the effect of attachment styles, manners of partner support, and cognitive representation of pain conditions as well as traumatic life events on the risk to develop chronic pain disorders and on the efficacy of interventions.

The complex subjective nature of pain involves both physiological processes as well as emotional and cognitive factors, alteration of pain processing and the meaning of pain sensitivity. Understanding such nature can be obtained by the use of advanced psychophysical and neurophysiological tools alongside with specific questionnaires, as well as interviewing patients (by the means of qualitative research). Such comprehensive exploration represents my research world view, allowing me to address issues of gender differences in pain processing and the mechanisms that are involved in women's vulnerability to suffer from particular symptoms or chronic disorder.

Involvement with the Department of Nursing, University of Haifa. I am deeply involved in the application of our Department's vision. Being the head of the Department of Nursing allowed me to promote my management skills and to become more aware of the students' and the staff's needs. In addition, the experience of being a Senate member and mainly, a representative of the Senate in the University Board Committee provides me with the opportunity to be involved from the macro level in issues that the University of Haifa deals with. I have been involved in the establishment of the graduate studies in Nursing in Haifa and Bnei-Brak Orthodox College (Mavchar) campuses. Mentoring our graduate students, who represent a multicultural matrix of the Israeli society, allows me the opportunity to become acquainted with the unique health needs of both healthcare providers and patients (see publication D61). My long-term experience in the master's

program at Mavchar, inspires me within the vision of the University of Haifa that emphasizes the need to develop cultural sensitivity, to enable nurses from diverse cultural settings, such as the Ultra-Orthodox community, to acquire advance academic qualifications, and become leaders and initiators of clinical projects that match the particular needs of Orthodox communities. Thus, this program emphasizes culturally-sensitive exploring and handling of complex health conditions. Very recently, one of my doctoral student, Hila Vidal, was chosen by the President of Israel, Mr. Rivlin, as one of the promising and outstanding doctoral students, and received the Presidential Prize for Excellence for her research, exploring health issues in the very Ultra-Orthodox sub-community. I believe that such findings will allow her to obtain significant information from populations that are less exposed to health services, and will encourage more Orthodox students to take part in the graduates' programs at the University of Haifa.