

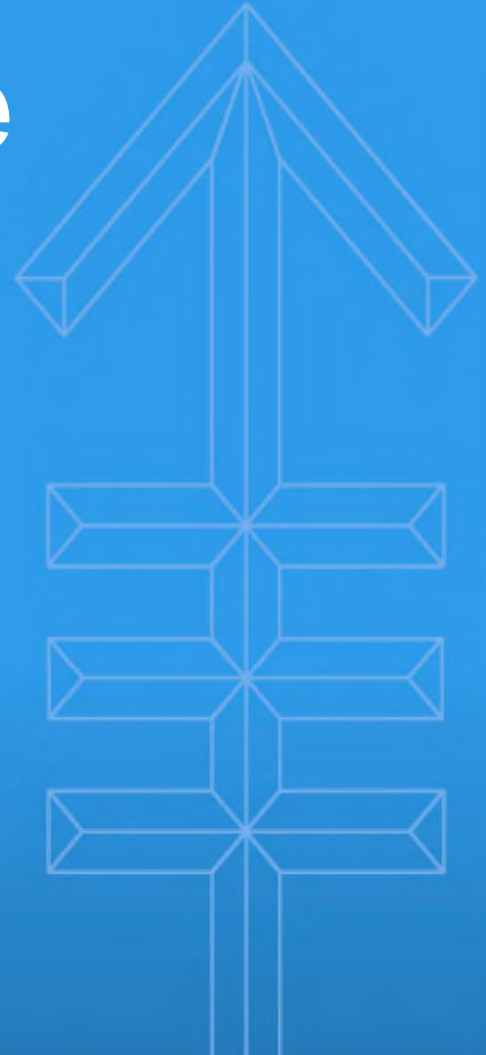


Memorial Sloan Kettering
Cancer Center

Integrative Cancer Care

Gary Deng, MD, PhD
Integrative Medicine Service

The 13th Annual Winter Lung Cancer Conference
Feb 14, 2016, Miami, FL



Disclosures

No relevant conflicts of interest to disclose.

72 year old man with stage 4 NSCLC on cisplatin and pemetrexed complains of chemo-induced nausea and peripheral neuropathy, back pain, anxiety, insomnia and fatigue.

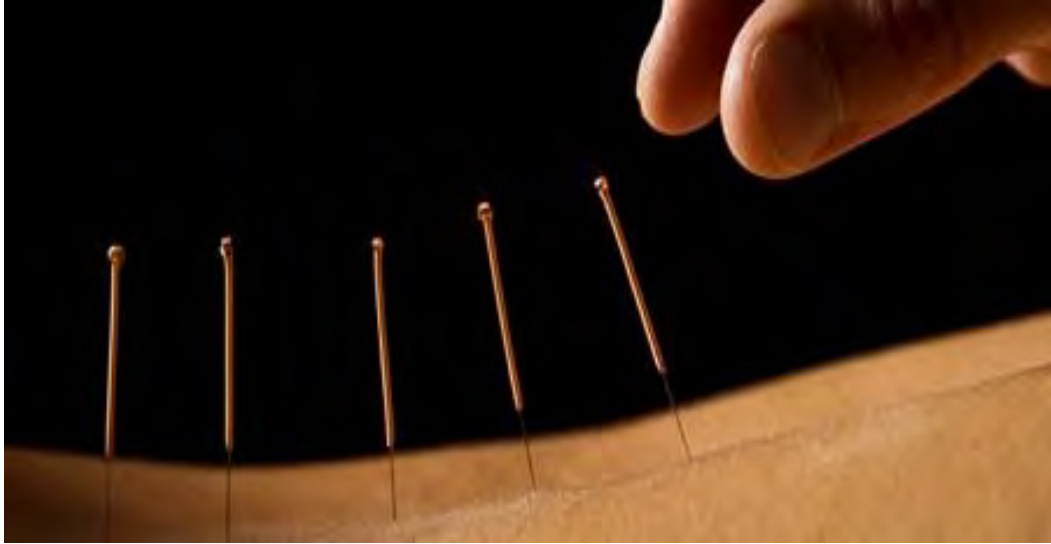
Patient asks whether acupuncture, yoga, or meditation would be helpful.





What would you tell the patient?

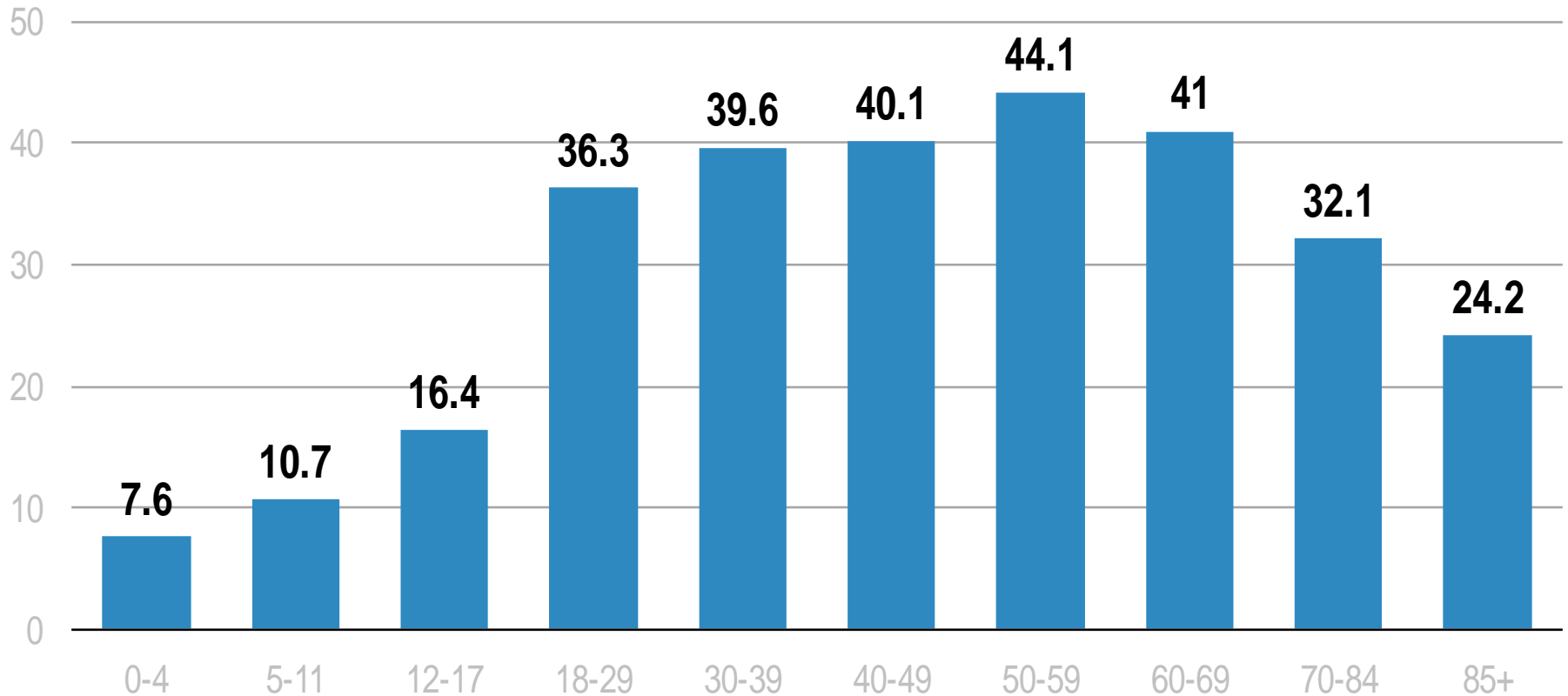
- 1. Acupuncture (Yes/No)*
- 2. Yoga (Yes/No)*
- 3. Meditation (Yes/No)*



- **Cancer patients are very interested in complementary therapies. When used properly, they improve patients' life and also help health care providers.**
- **A lot has happened in the last decade in terms of research. I will give a summary of the state of the science.**
- **The main question is no longer "does it work," but multi-dimensional: how it works, for whom it works, and how to apply it in clinical practice. I will use examples to show that, esp. how it relates to hospital operations.**
- **The bigger picture of the role integrative medicine plays in enhancing quality of cancer care. Call for actions.**

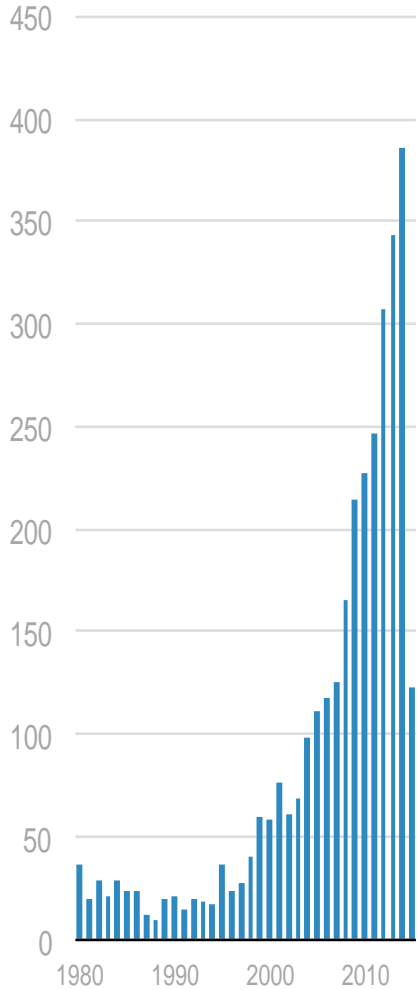
Complementary Therapy Use

Percent using complementary therapies, by age

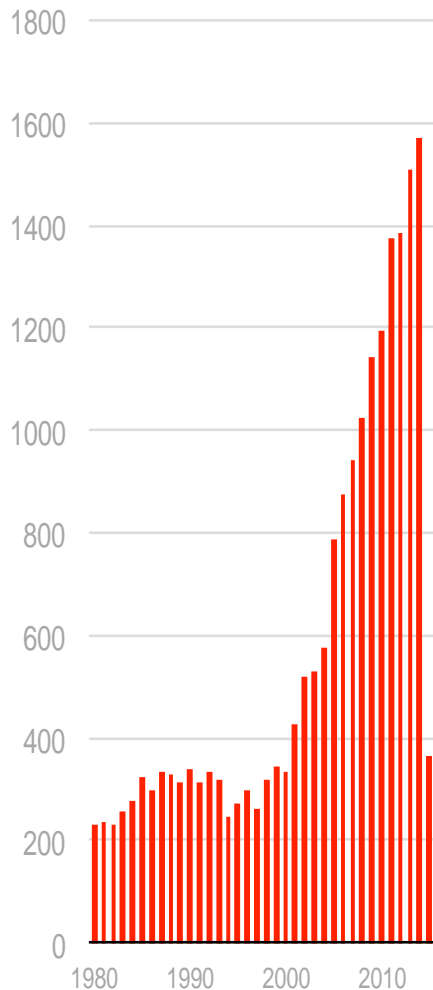


PubMed Publications: 1980 to present

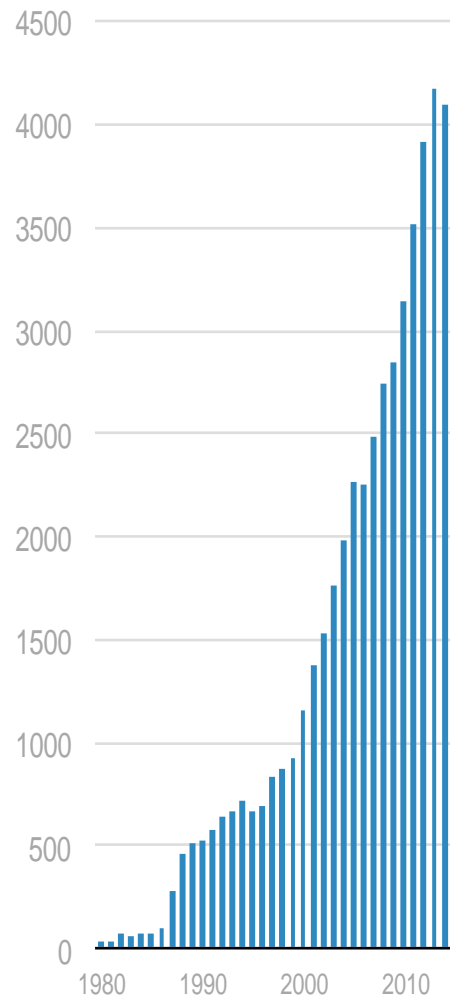
Meditation



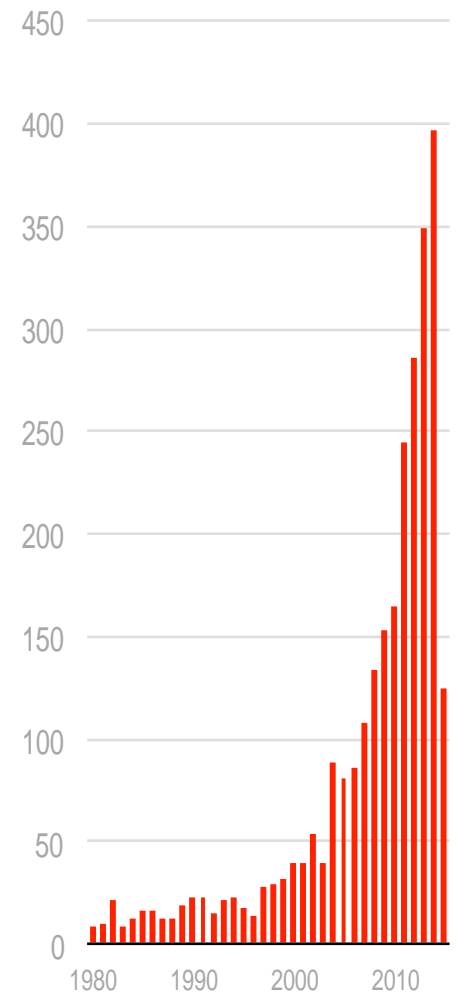
Acupuncture



Herbal



Yoga



Acupuncture

A photograph showing a woman with blonde hair in a bun lying on her back, receiving acupuncture treatment. A practitioner with dark hair is seen from the side, carefully inserting a thin needle into the patient's back. Several other red needles are already in place on the patient's back. The background features a framed artwork with a geometric, circular pattern.

- › Pain
- › Nausea Vomiting
- › Dry mouth
- › Hot flashes
- › Anxiety
- › Insomnia
- › GI dysfunction
- › Lymphedema
- › Fatigue
- › Neuropathy

Mind-Body Therapy



- › Meditation
- › Hypnosis
- › Guided Imagery
- › Breathing Exercises
- › Qigong

For

- › Anxiety
- › Stress/Distress
- › Sleep
- › Depression
- › Pain
- › General Quality of Life

A close-up photograph of a person lying face down on a massage table, receiving a back massage. The therapist's hands are visible, applying pressure to the person's back. The scene is lit with warm, soft light, creating a relaxing atmosphere. The person's hair is blonde and tied back. The therapist is wearing a dark-colored top.

Massage Therapy

- › Swedish massage
- › Reflexology
- › Lymphatic drainage
- › Myofascial release
- › Shiatsu
- › Tuina
- › Reiki
- › Ayurvedic massage

Music Therapy



› Receptive or Participatory

› Bring comfort and joy

› Ease fear

› Increase relaxation

› Enhance self-expression

› Lessen feelings of isolation
and loneliness



Yoga / Tai Chi

Acupuncture for Chronic Pain

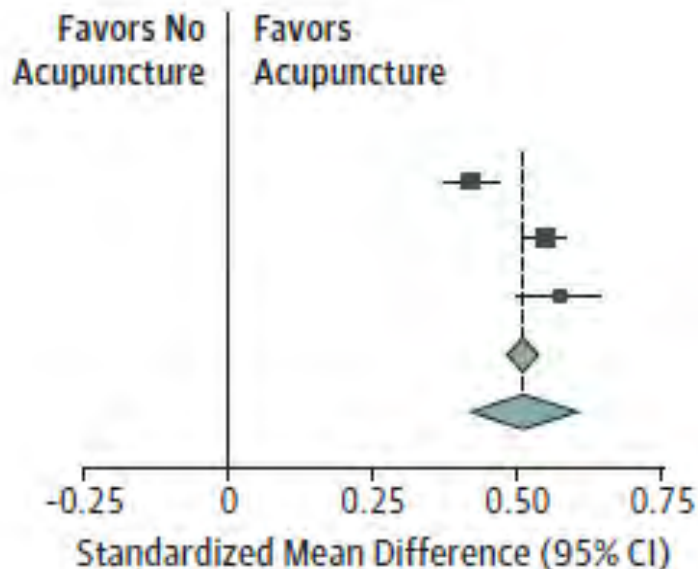
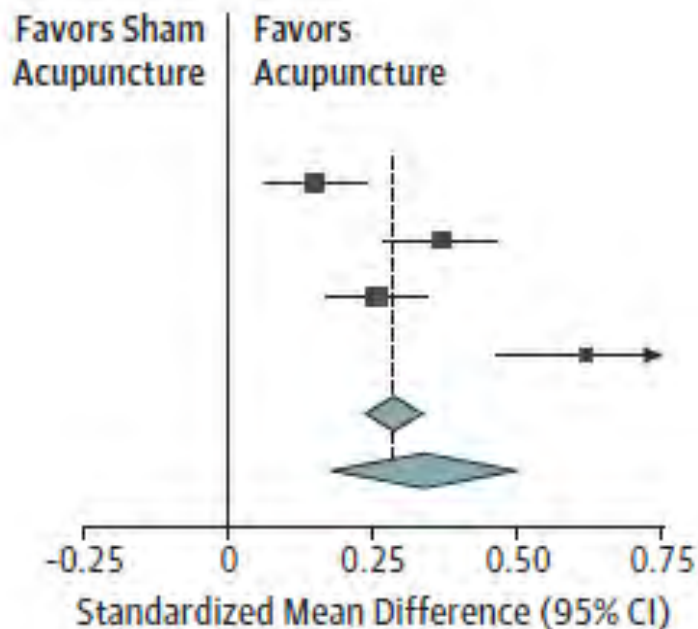
Figure. Results of the Individual Patient Data Meta-analysis

A Acupuncture vs sham acupuncture

Pain Type	Trials	Total No. of Participants		Standardized Mean Difference (95% CI)
		Sham Acupuncture	Acupuncture	
Headache	4	683	799	0.15 (0.07-0.24)
Musculoskeletal	8	708	804	0.37 (0.27-0.46)
Osteoarthritis	5	799	830	0.26 (0.17-0.34)
Shoulder	3	312	295	0.62 (0.46-0.77)
Overall (fixed-effects estimate)				0.29 (0.24-0.33)
Overall (random-effects estimate)				0.34 (0.18-0.50)

B Acupuncture vs no acupuncture

Pain Type	Trials	Total No. of Participants		Standardized Mean Difference (95% CI)
		No Acupuncture	Acupuncture	
Headache	5	2224	2408	0.42 (0.37-0.46)
Musculoskeletal	7	3739	4000	0.55 (0.51-0.58)
Osteoarthritis	6	1062	1164	0.57 (0.50-0.64)
Overall (fixed-effects estimate)				0.51 (0.48-0.53)
Overall (random-effects estimate)				0.51 (0.42-0.60)



Acupuncture for Chemo-Induced Peripheral Neuropathy

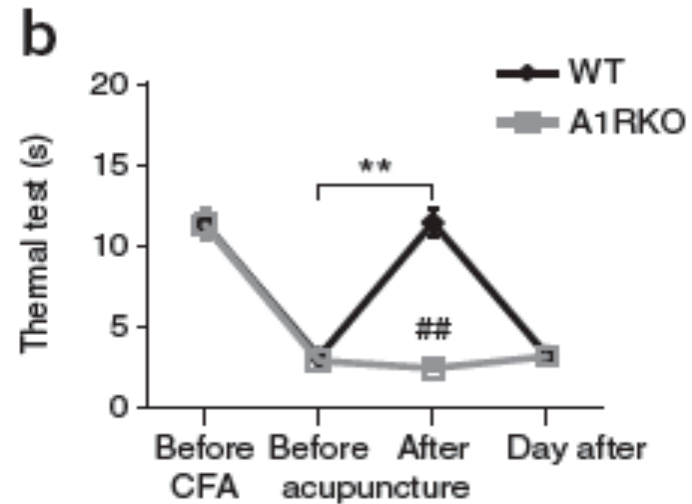
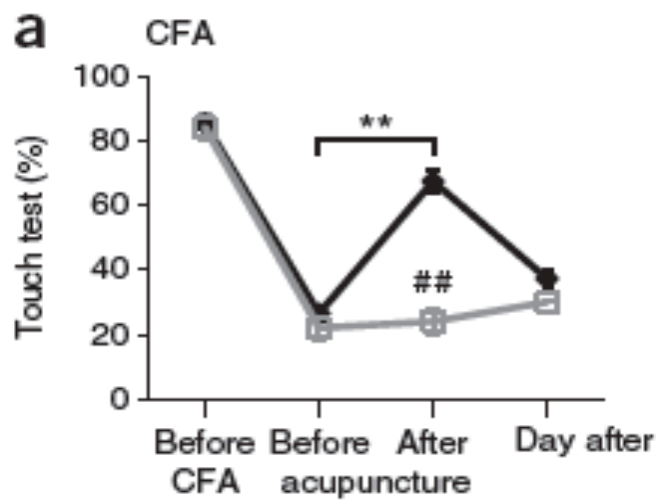
TABLE 1: Characteristics of the studies involving the use of acupuncture in CIPN.

Authors	Patients (n)	Design of the study	Intervention and control	Duration of intervention	Outcome(s)	Results
Alimi et al., 2003 [23]	90	Prospective randomized controlled trial	Auricular acupuncture versus placebo acupuncture and seeds	2 months	VAS pain score and medication consumption	True acupuncture better than placebo
Wong and Sagar, 2006 [24]	5	Prospective case series	Acupuncture (no control)	16 weeks (Two 6-week courses with a 4-week therapy free interval)	Pain score and WHO CIPN grade	Improvement
Xu et al., 2010 [25]	64	Controlled randomized trial	Acupuncture versus cobamamide	Not known	Questionnaire of peripheral neuropathy	Acupuncture better than cobamamide
Bao et al., 2011 [26]	1	Case report	Acupuncture (no control)	22 weeks	VAS pain score	No more symptoms
Donald et al., 2011 [27]	18	Retrospective case series	Acupuncture (no control)	6 weeks	Subjective symptoms	82% improved
Schroeder et al., 2012 [28]	11	Retrospective controlled nonrandomized trial	Acupuncture and best medical care versus best medical care	10 weeks	Nerve conduction studies	Acupuncture better than control
Tian et al., 2011 [29]	76	Controlled randomized trial	Warm acupuncture and moxibustion versus Neurotropin	Not known	Quality of life and neurotoxic symptoms	Acupuncture better than Neurotropin

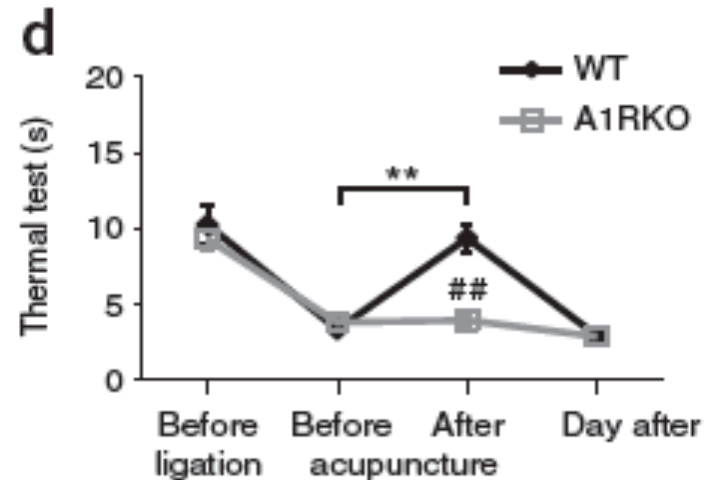
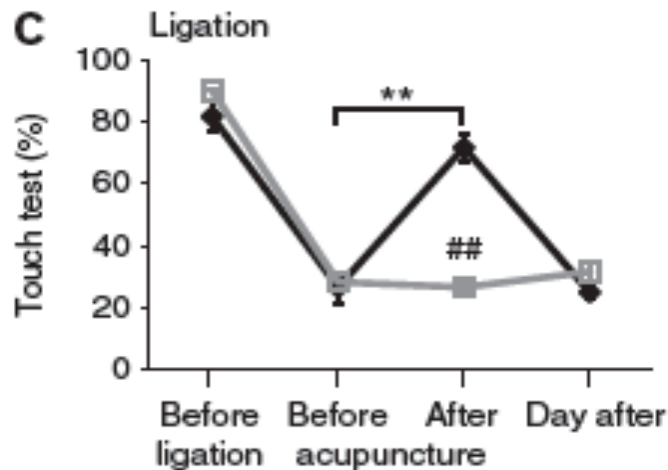
Legend: VAS: visual analog scale; FACT-G: Functional Assessment of Cancer Therapy-General.

Analgesic Effect of Acupuncture Is Mediated via Adenosine

Tissue injury

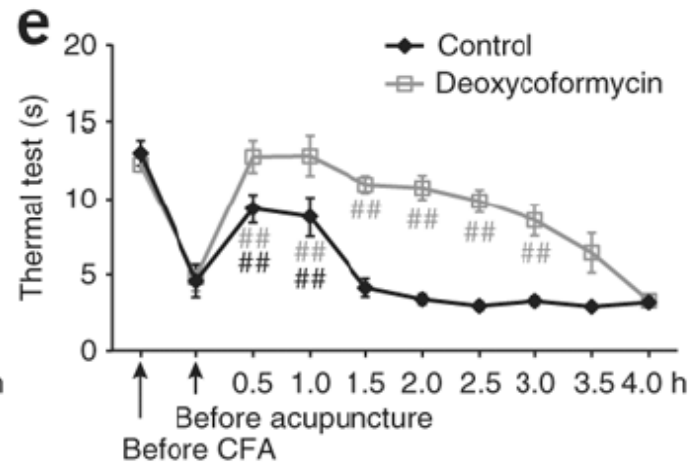
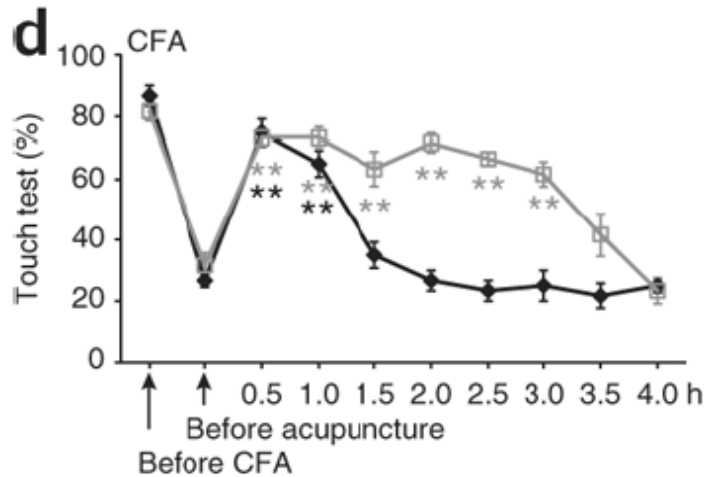


Neuro-pathy

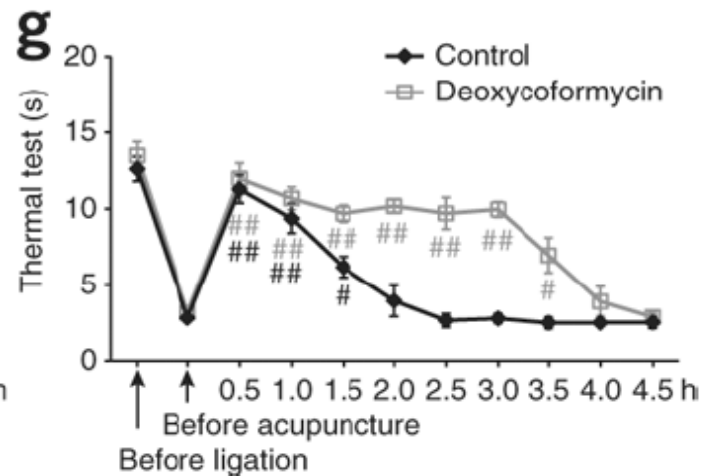
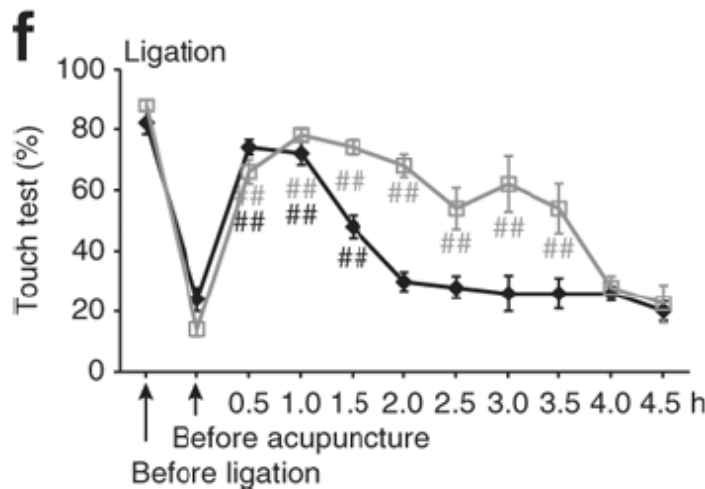


Inhibition of deaminase activity enhances acupuncture's effect

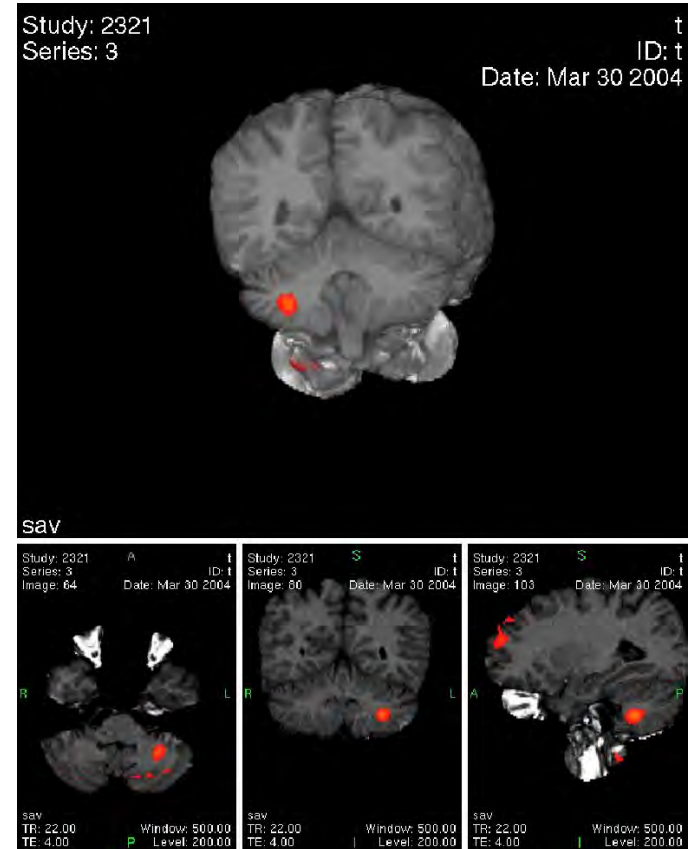
Tissue injury

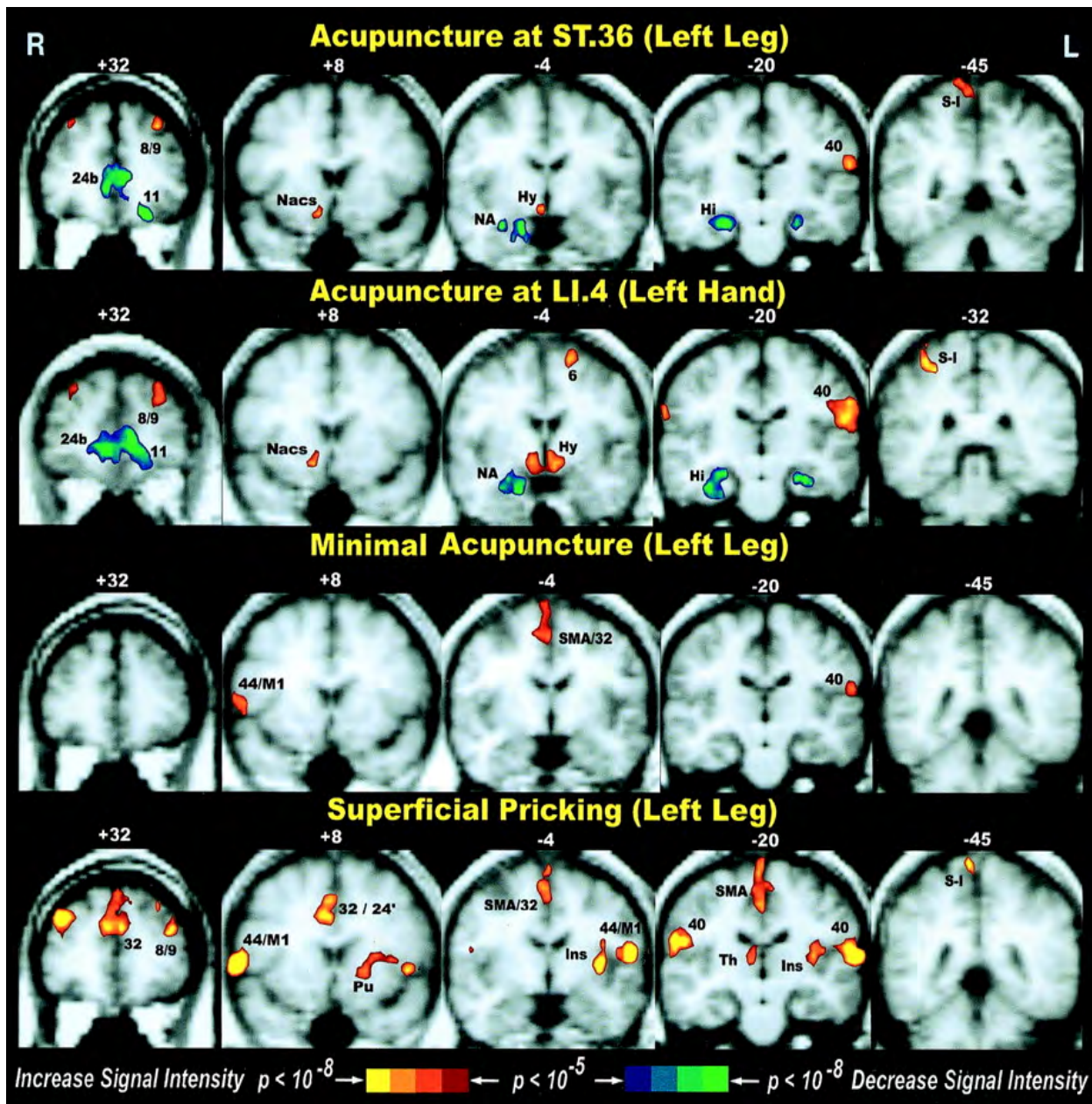


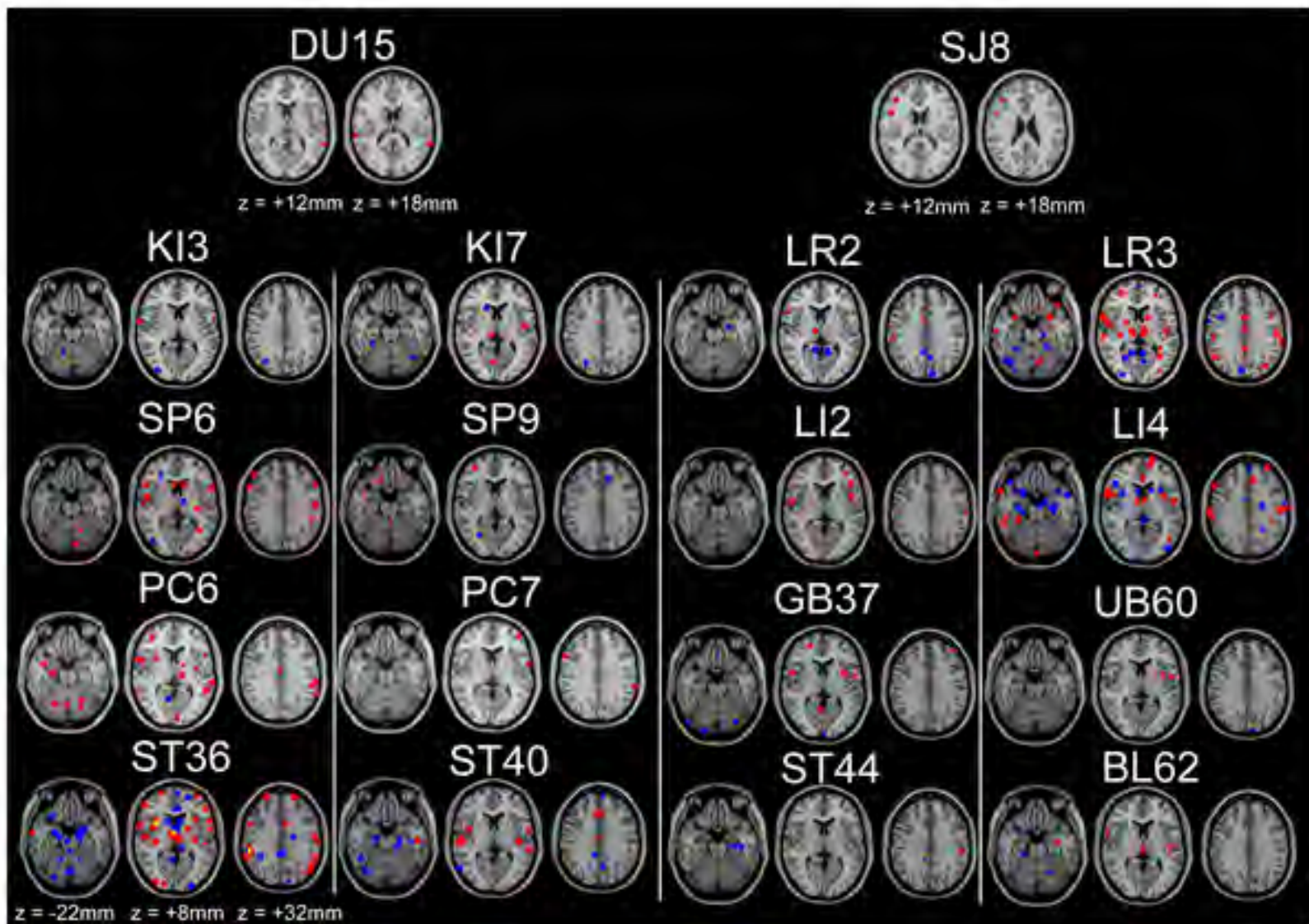
Neuro-pathy



Acupuncture and Functional MRI







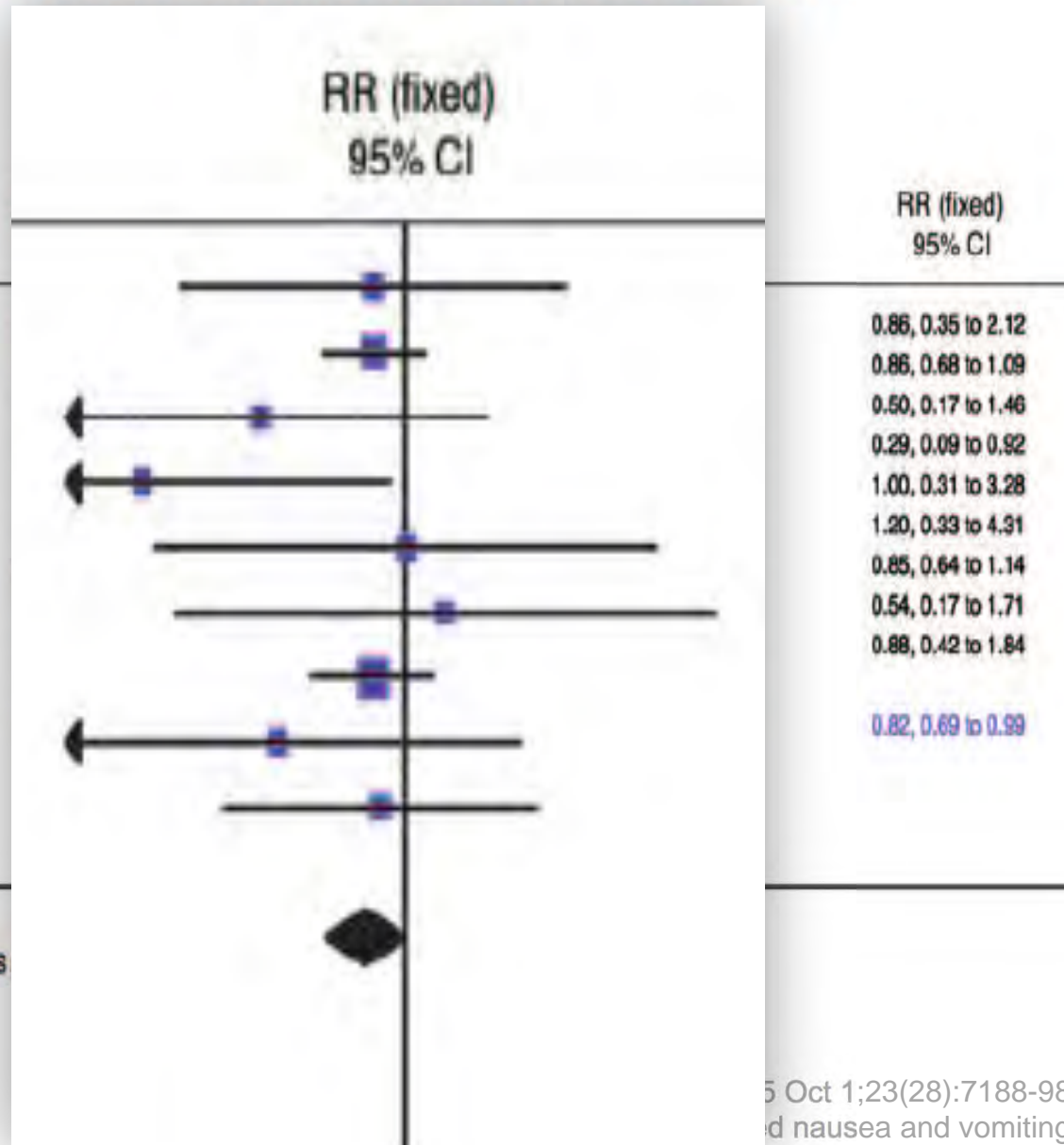
Map of brain response to 18 different acupuncture points.

Acupuncture Reduces Chemo-Related Nausea & Vomiting

All Trials (all modalities combined)

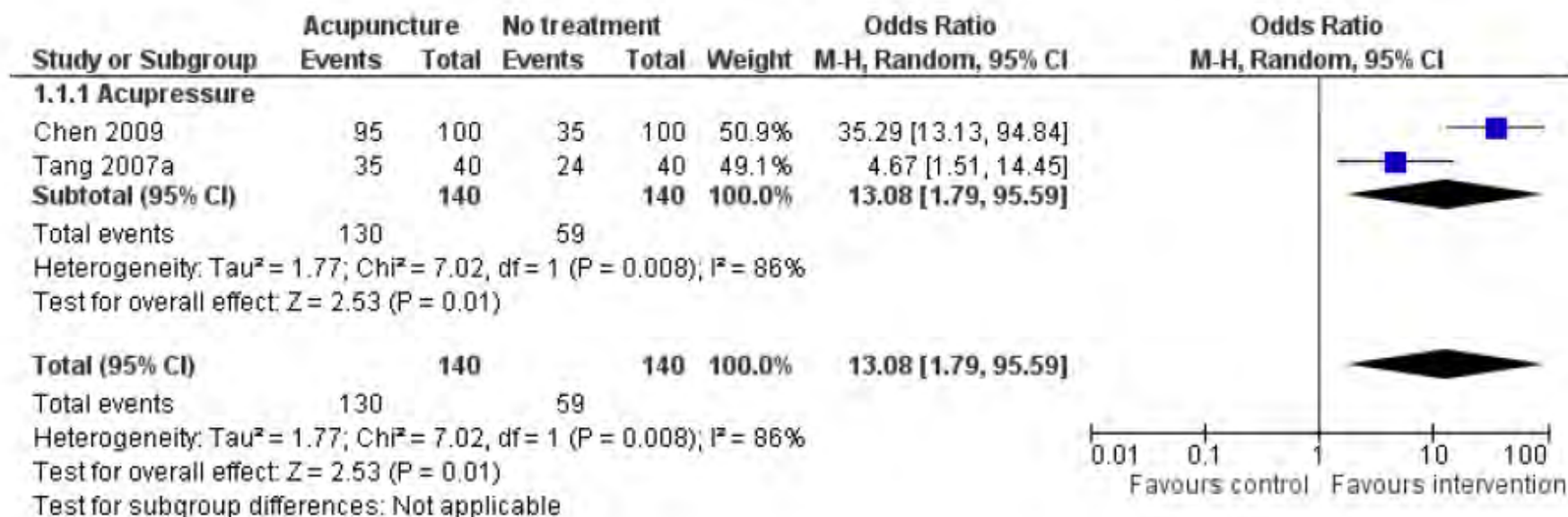
Study or Sub-Category	Acupoint Stimulation n/N
Pearl 1999	6/21
Shen 2000	26/37
Dundee 1988	3/10
Dundee 1989	2/7
Noga 2002	5/60
Roscoe 2002	3/14
Roscoe 2003	97/498
Streitberger 2003	4/41
Treich 2003	9/28
Total (95% CI)	714
Total events: 155 (acupoint stimulation), 154 (control)	
Test for heterogeneity: $\chi^2 = 5.10$, $df = 8$ ($P = .75$), $I^2 = 0\%$	
Test for overall effect: $Z = 2.07$ ($P = .04$)	

Favors



Insomnia

Figure 3. Forest plot of comparison: 1 Acupuncture alone versus no treatment, outcome: 1.1 Frequency of improvement in sleep quality.



Insomnia

Figure 4. Forest plot of comparison: 2 Acupuncture alone versus placebo or sham acupuncture, outcome: 2.1 Frequency of improvement in sleep quality.

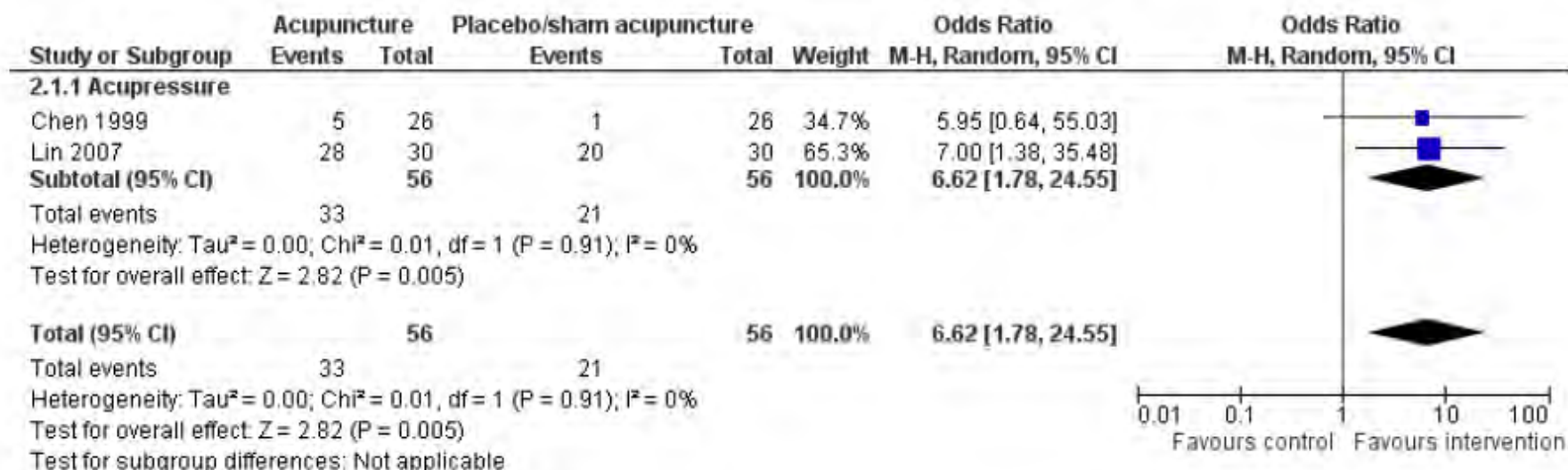
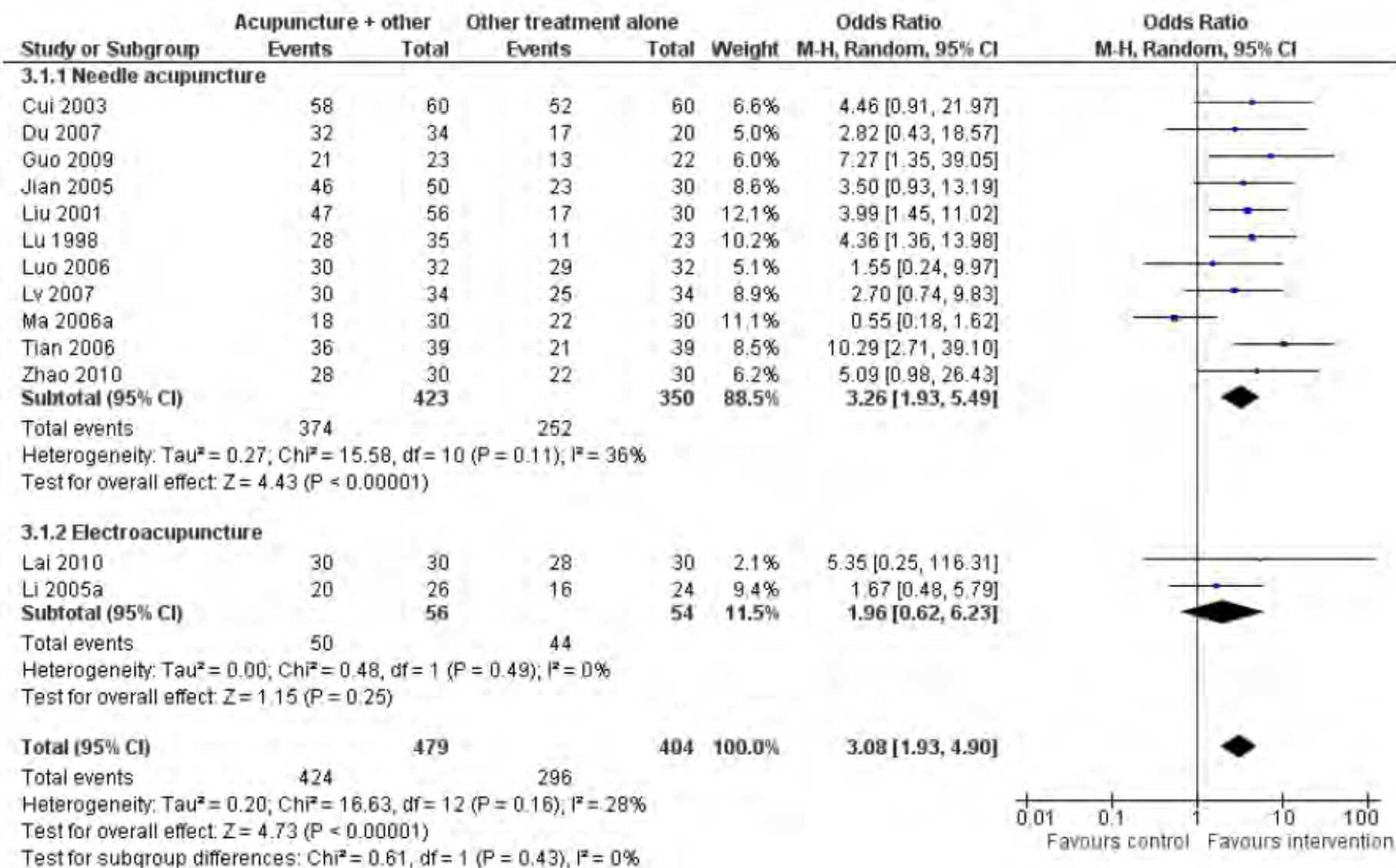
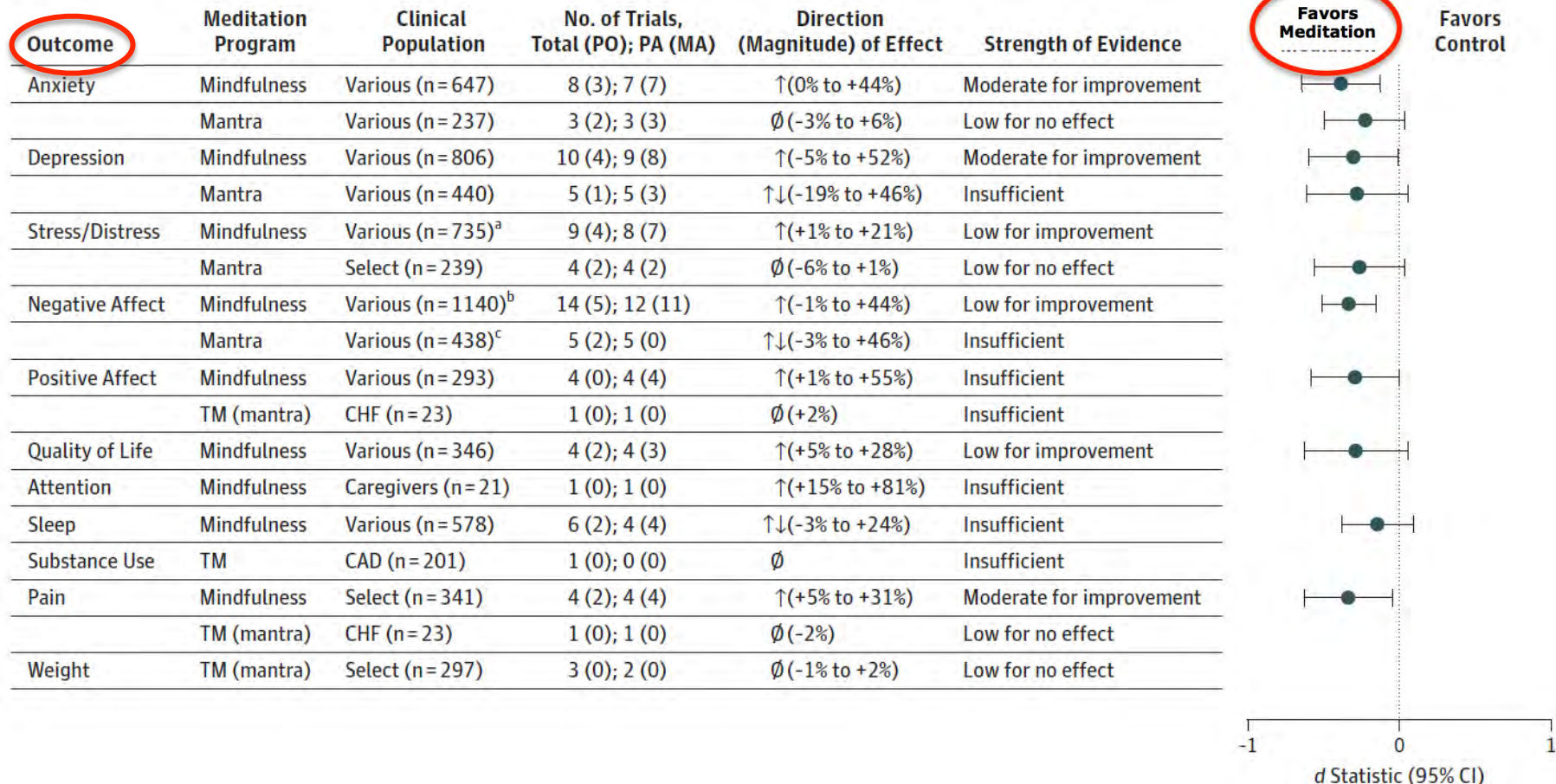


Figure 5. Forest plot of comparison: 3 Acupuncture as adjunctive to other treatment versus other treatment alone, outcome: 3.1 Frequency of improvement in sleep quality.



Mindfulness Meditation: Present-centered, nonjudgmental, awareness

A Comparisons of Meditation Programs With Nonspecific Active Controls (Efficacy)



Meditation programs for psychological stress and well-being: a systematic review and meta-analysis. 47 trials with 3515 participants, JAMA Intern Med. 2014 Mar;174(3):357-68.

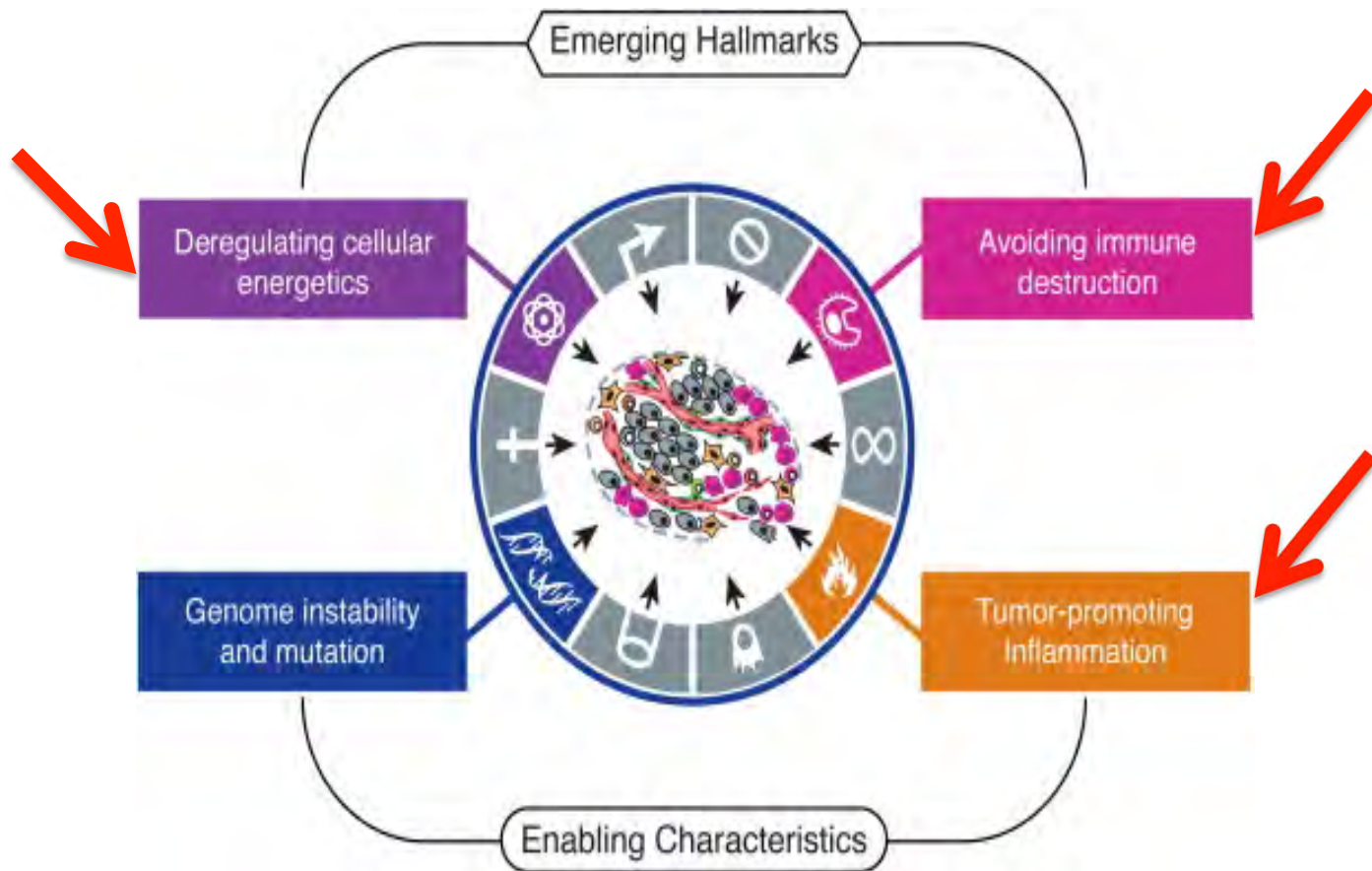
Effects of Stress on Cancer

Table 1
Representative studies on the effects of stress and stress-associated hormones on cancer.

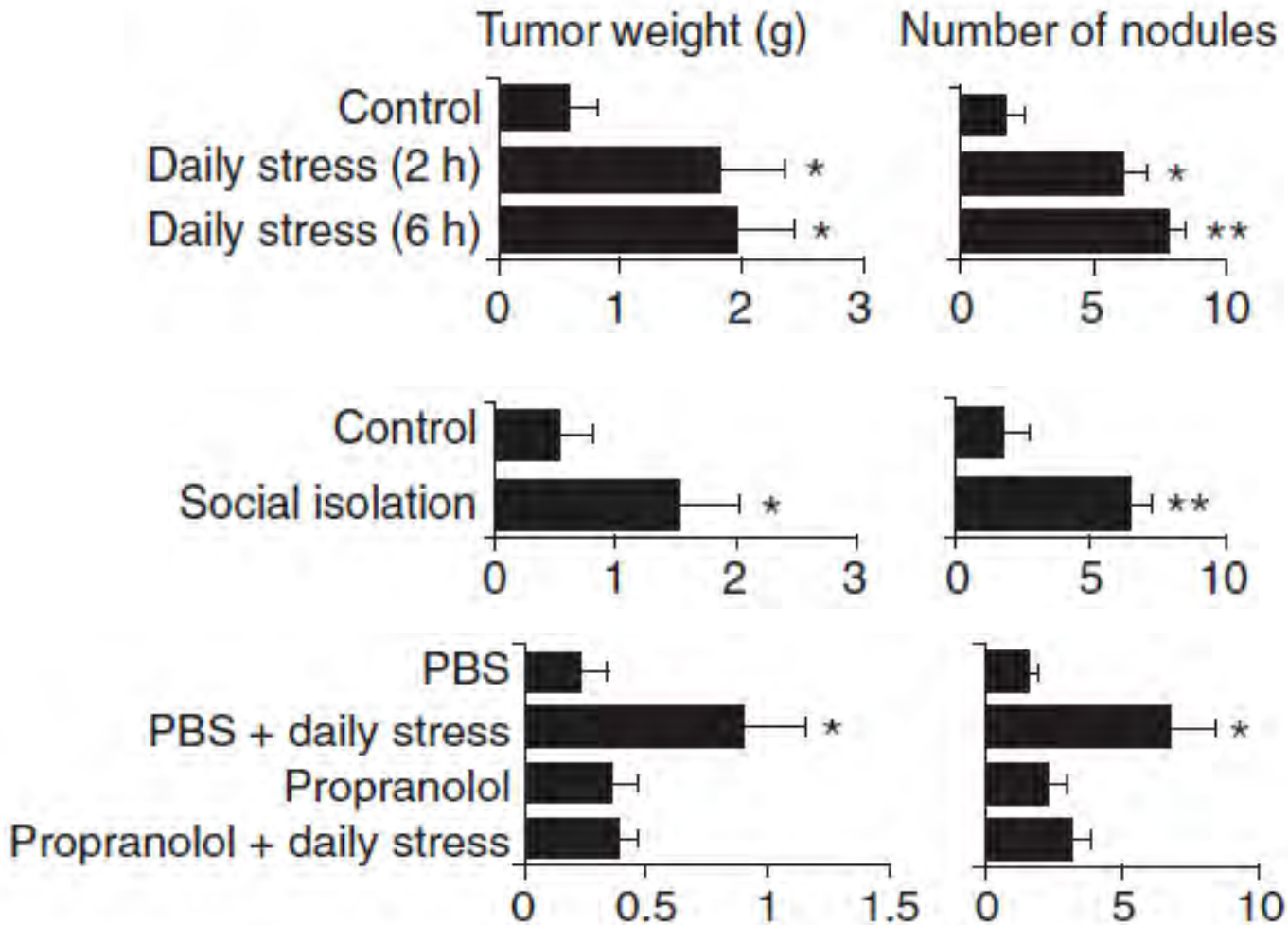
Experimental condition	Species	Main biological effect	Cancer type	Effect on tumor growth	References
Immobilization stress	Mice	Increased angiogenesis	Ovarian	Increased growth	Thaker et al. (2006)
Enriched environment	Mice	Decreased proliferation	Skin, colon	Decreased tumor growth	Cao et al. (2010)
Restraint stress	Mice	Anchorage-independent survival	Ovarian	Increased growth and metastasis	Sood et al. (2010)
Force swim, surgical stress	Rat	Suppressed NK cell activity	Leukemia, breast	Increased growth	Ben-Eliyahu et al. (1999)
Restraint stress	Mice	Suppressed immune function	Skin	Increased susceptibility to UV-induced disease	Saul et al. (2005)
Restraint stress	Mice	Increased macrophage infiltration	Breast	Increased metastasis	Sloan et al. (2010)
Dopamine administration	Mice, Rat	Decreased angiogenesis	Gastric	Decreased growth	Chakraborty et al. (2004)
Depression	Human	Increased cortisol, IL-6	Ovarian	n/a	Lutgendorf et al. (2008a-c)
Psychological intervention	Human	Increased immune activity	Breast	Improved survival	Andersen et al. (2010)
Social support	Human	Increased immune activity	Ovarian	n/a	Lutgendorf et al. (2005)
Beta-blocker Administration	Human	n/a	Breast	Decreased mortality	Barron et al. (2011)
Stressful life events	Human	n/a	Breast	No association with cancer risk	Duijts et al. (2003)
Personality	Human	n/a	Breast	No association with cancer risk	Bleiker et al. (2008)
Stressful life events	Human	n/a	Breast	Association with cancer risk	Lillberg et al. (2003)
Stressful life events	Human	n/a	Breast	Association with cancer risk	Price et al. (2001)

Emerging Cancer Hallmarks and Enabling Characteristics

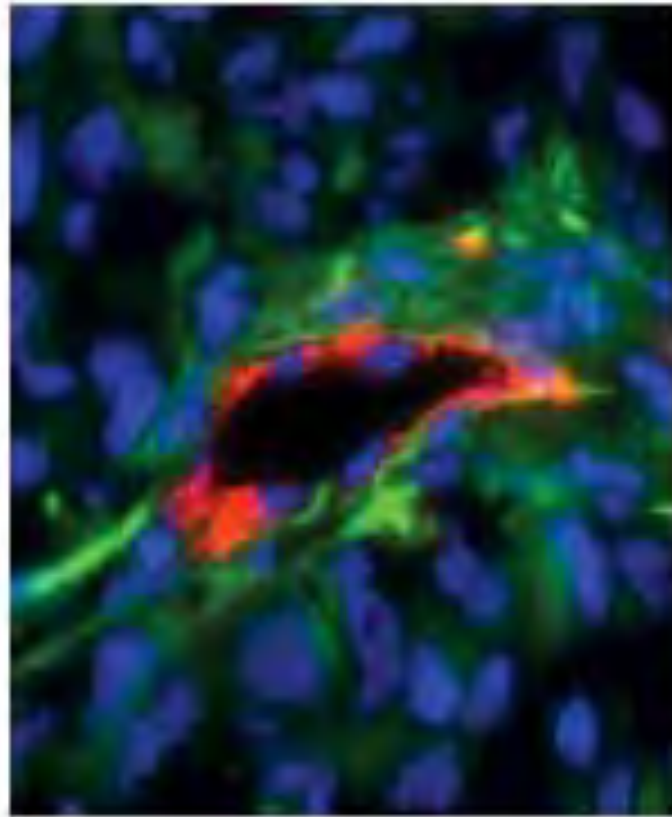
- What happens elsewhere in the body can influence how cancer cells behave



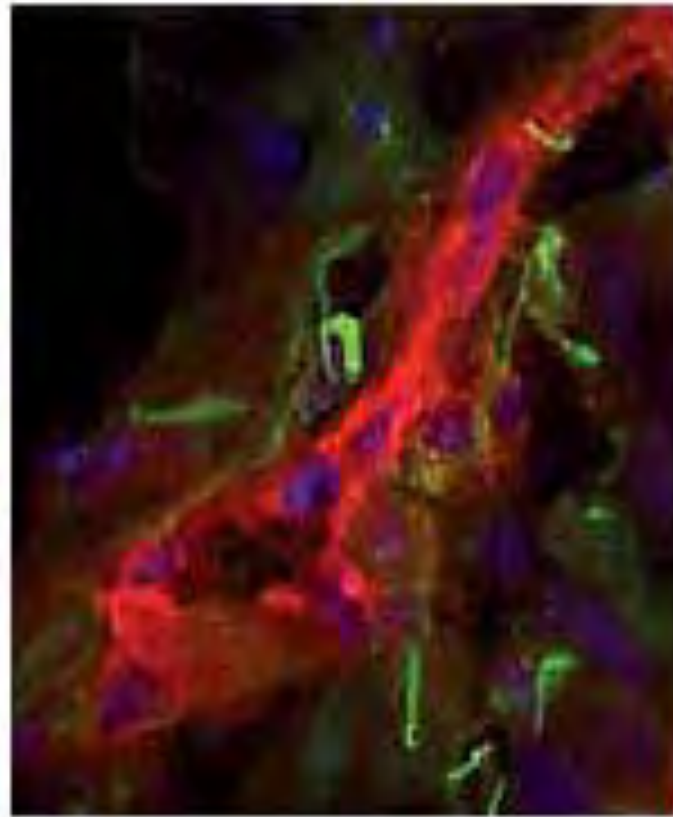
Chronic stress promotes tumor growth and angiogenesis in a mouse model of ovarian carcinoma



Chronic stress promotes tumor growth and angiogenesis in a mouse model of ovarian carcinoma



Control



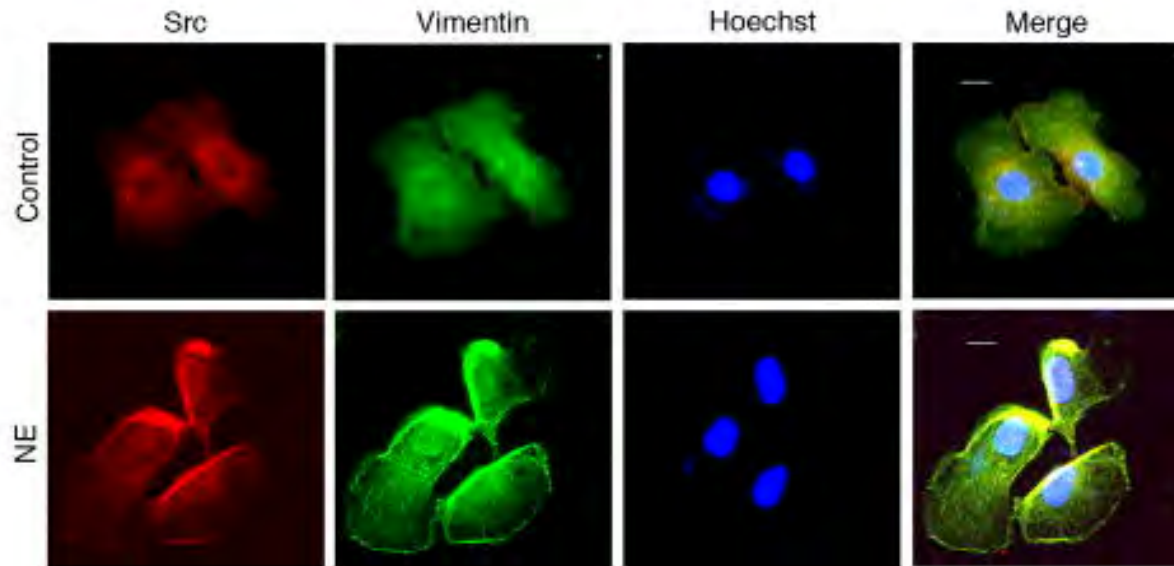
Daily Stress

Red:
endothelial
cells
Green:
pericytes

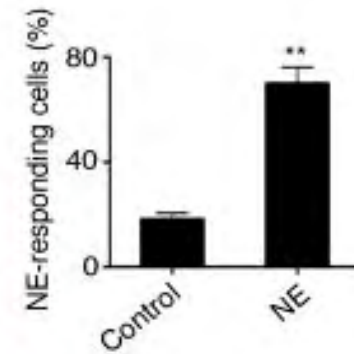
Stress and Cancer: Animal Models

- Src activation by β -adrenoreceptors is a key switch for tumor metastasis

f



g



Biobehavioral Pathways in Cancer

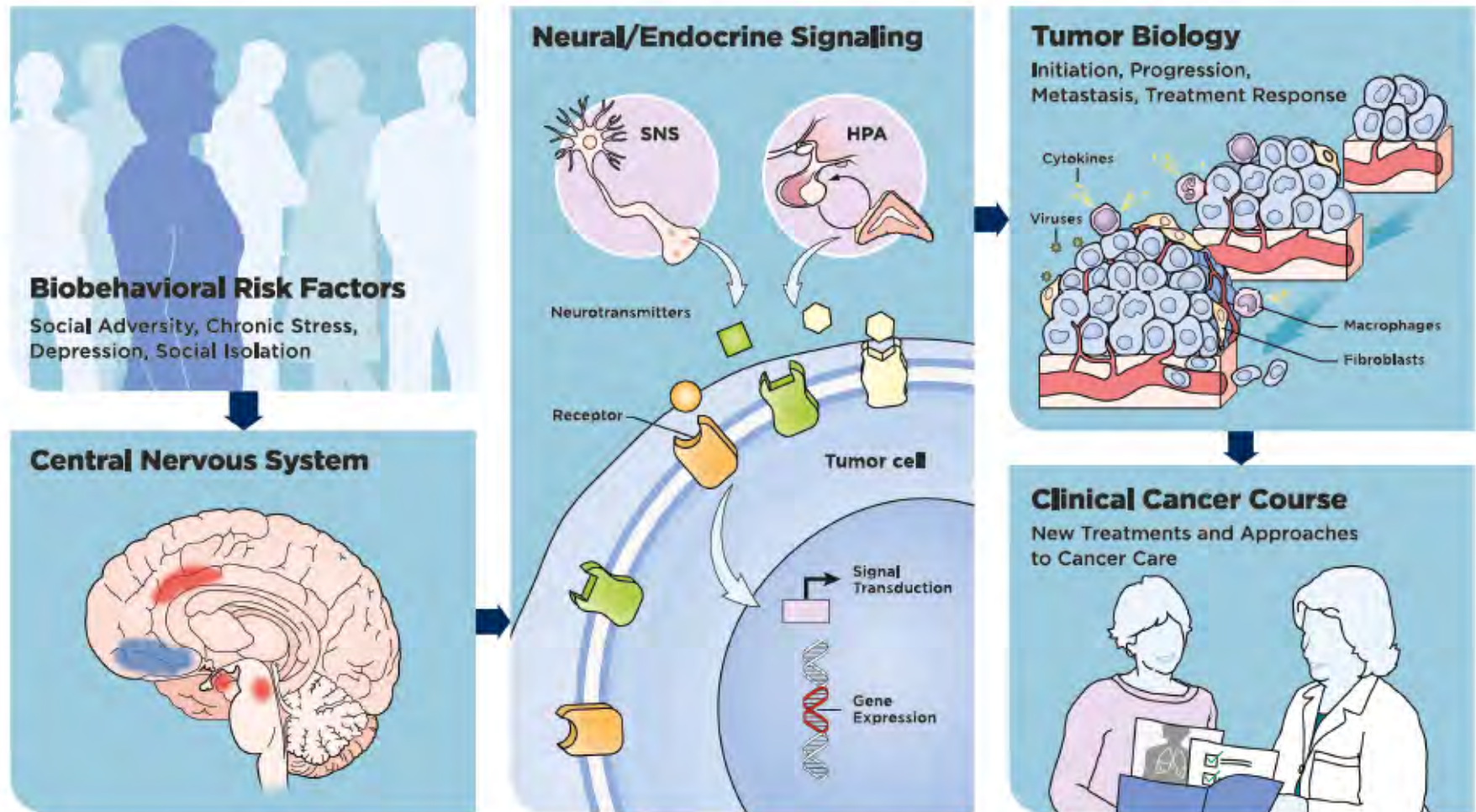


Fig. 1. Heuristic framework for research on biobehavioral risk factor influences on clinical cancer course.



Neuro-imaging Studies of Meditation

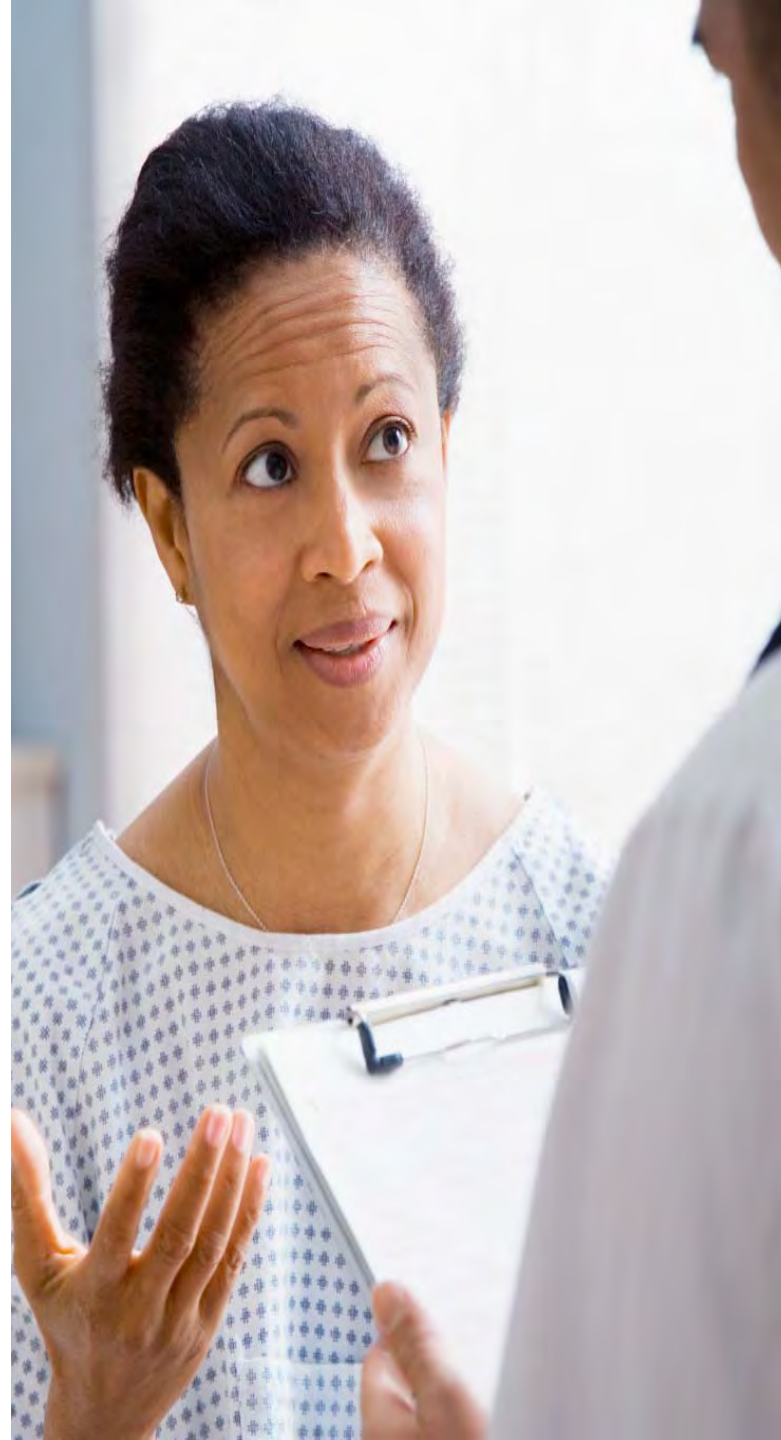


What would you tell the patient?

- 1. Acupuncture (Yes/No)*
- 2. Yoga (Yes/No)*
- 3. Meditation (Yes/No)*

64 year old woman with stage 4 NSCLC, progression of disease after first line chemotherapy, now on nivolumab.

Patient wants to explore “all options” and asks whether she can take graviola, turmeric and probiotics.





?

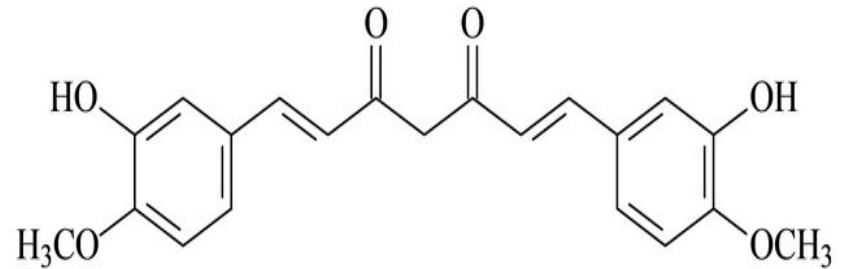
What would you tell the patient?

- 1. Graviola (Yes/No)*
- 2. Turmeric (Yes/No)*
- 3. Probiotics (Yes/No)*



Graviola aka Soursop

Leaves contain compounds that inhibit cancer cells in vitro
Inhibit P-glycoprotein thus influence drug metabolism
Neurotoxicity has been reported



Turmeric and Curcumin

In vitro: effects on NK-kB, Stat3, mTOR, CDK, VEGF

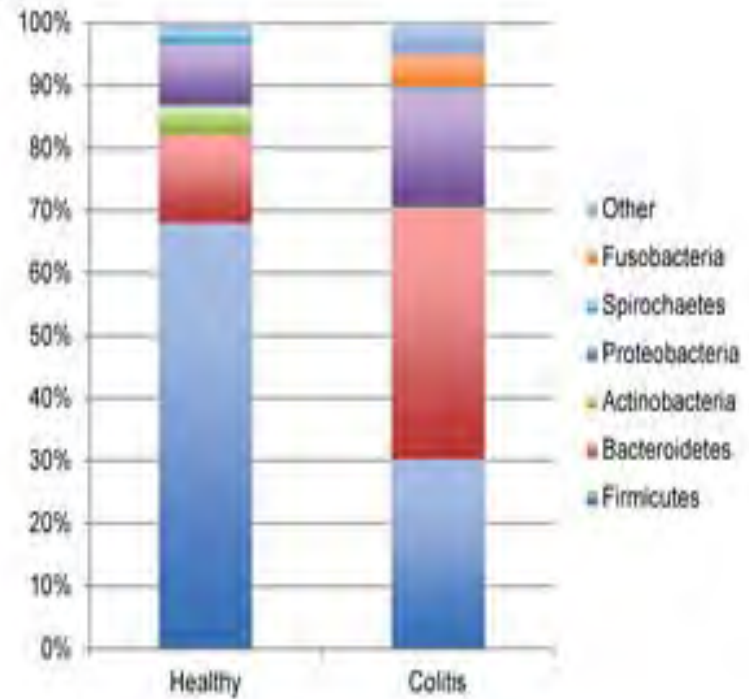
Poor bioavailability: needs special formulation

Clinical data: activity in pancreatic cancer patients reported

Phase II trial of curcumin in patients with advanced pancreatic cancer

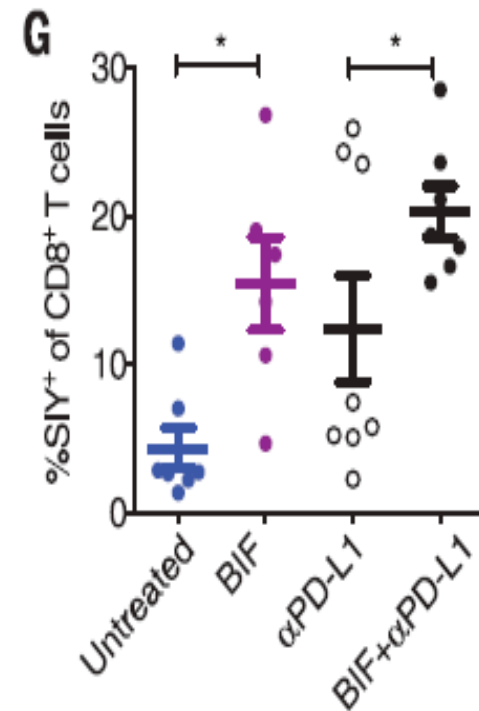
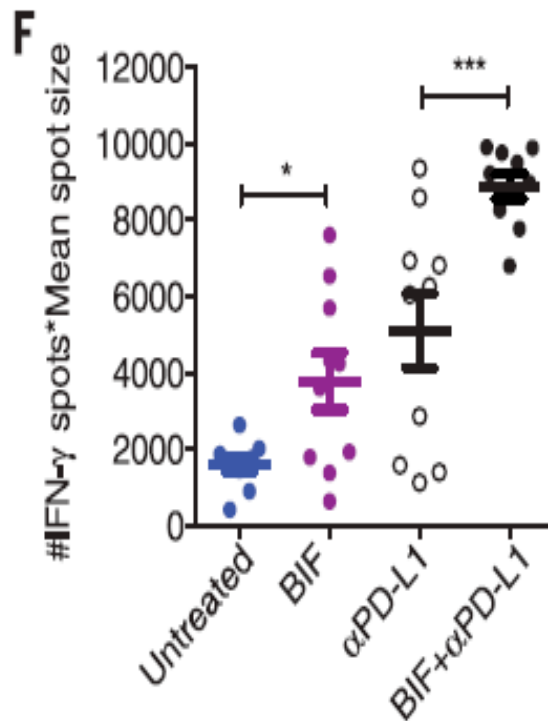
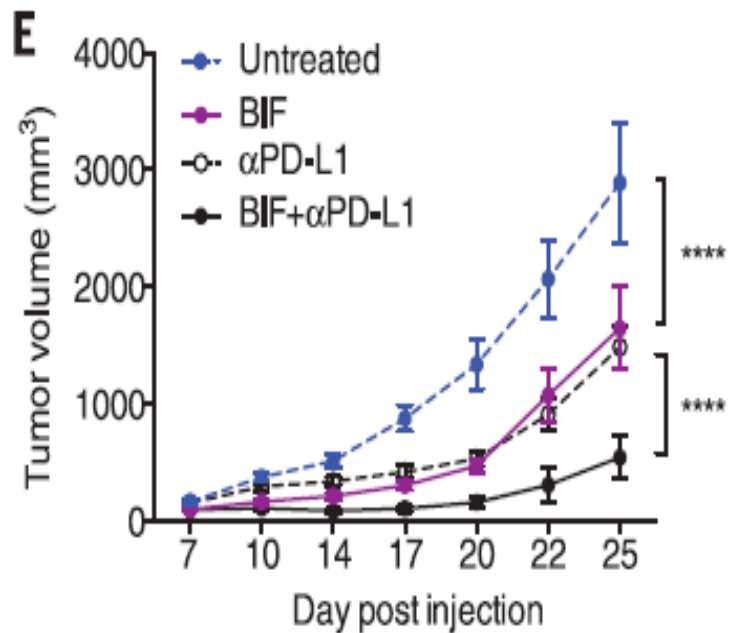
21 evaluable patients
1 stable dz for 18 m
1 marked yet brief regression





Probiotics

Saccharomyces boulardii reduces *C. diff* associated disease
Bifidobacterium enhances effect of anti-PD-L1 antibody
Bacteroidales enhances effect of anti-CTLA-4 antibody



Bifidobacterium

Enhances effect of anti-PD-L1 antibody in melanoma mice model, possibly through altering dendritic cell activity, which in turn leads to improved tumor-specific CD8⁺ T-cell function.



?

What would you tell the patient?

- 1. Graviola (Yes/No)*
- 2. Turmeric (Yes/No)*
- 3. Probiotics (Yes/No)*



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About this Resource

Objective information for oncologists, healthcare professionals, and consumers

Our Herbal Policy

Healthcare providers always inquire about and document the use of complementary therapies for all patients





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"Clinical practice guidelines are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances." (*Institute of Medicine, 1990*)

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Joint Commission's Pain Management Standard

Joint Commission



Requirement

Clarification to Standard PC.01.02.07

Effective January 1, 2015, for Ambulatory Care, Critical Access Hospital, Home Care, Hospital, Nursing Care Centers, and Office-Based Surgery Practice Programs

Standard PC.01.02.07: The [organization] assesses and manages the [patient's] pain.

Revised Rationale for PC.01.02.07 (New for Ambulatory Care and Office-Based Surgery Practice)

The identification and management of pain is an important component of [patient]-centered care. [Patients] can expect that their health care providers will involve them in their assessment and management of pain. Both pharmacologic and nonpharmacologic strategies have a role in the management of pain. The following examples are not exhaustive, but strategies may include the following:

- **Nonpharmacologic strategies:** physical modalities (for example, **acupuncture therapy**, chiropractic therapy, osteopathic manipulative treatment, **massage therapy**, and

physical therapy), **relaxation therapy**, and cognitive behavioral therapy

- Pharmacologic strategies: nonopioid, opioid, and adjuvant analgesics

C EP 4: The [organization] either treats the [patient's] pain or refers the [patient] for treatment. **M** **3** **R**

New Note for EP 4 (Additional Note for Nursing Care Centers)

Note: *Treatment strategies for pain may include pharmacologic and nonpharmacologic approaches. Strategies should reflect a [patient]-centered approach and consider the patient's current presentation, the health care providers' clinical judgment, and the risks and benefits associated with the strategies, including potential risk of dependency, addiction, and abuse.*

OUR MISSION:
 TO ADVANCE EVIDENCE BASED,
 COMPREHENSIVE, INTEGRATIVE HEALTHCARE TO
 IMPROVE THE LIVES OF PEOPLE AFFECTED BY
 CANCER.



Clinical Practice Guidelines

SIO is pleased to provide two new resources on integrative oncology. SIO developed new [Clinical Practice Guidelines on the Use of Integrative Therapies as Supportive Care in Patients Treated for Breast Cancer](#), published in November 2014. The guidelines are a resource for clinicians and patients to inform evidence-based decisions on the use of integrative therapies during breast cancer treatment. Researchers at US and Canadian evaluated the efficacy and safety of more than 80 therapies.

The Journal of the National Cancer Institute Monograph has released a special issue co-sponsored by SIO. [The](#)



Conference

Mark your calendar: SIO's 13th International Conference will be held November 5-7, 2016, with a theme of "Advancing the Global Impact of Integrative Oncology" in Miami, Florida. More information coming soon!

Thank you for making our 2015 conference such a success. More than 350 physicians, researchers, nurses, integrative medicine practitioners, patient advocates, and patients from 19 countries convened in Boston, Massachusetts, from November 14-17 at the 12th International Conference.

Events

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05.17.2016 - 05.20.2016

[International Congress on Integrative Medicine & Health](#)



11.05.2016 - 11.07.2016

[13th International Conference of the Society for Integrative Oncology](#)

Integrative Medicine Enhances Cancer Care

For Patients:

- **Helps reduce symptoms**
- **Promotes self-care**
- **Enhances quality of life**
- **Nurtures the well-being of body, mind, spirit**
- **Patients become ‘ambassadors’ of healthy lifestyle to family and friends**

For Cancer Care Professionals:

- **Heals the healers and improves wellness so that they become more effective health care professionals**
- **Strengthens relationship with patients**
- **Enhances the overall quality of care to patients**

