



Riordan
Clinic

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Riordan Clinic is a not-for-profit 501(c)(3), nutrition-based health facility in Wichita, Kansas cofounded in 1975 by Olive W. Garvey and Hugh D. Riordan. We have integrated lifestyle and nutrition to help you find the underlying causes of your illness. Since our inception in 1975, the mission has been clear and unwavering to "...stimulate an epidemic of health."

How the Circadian Rhythm Affects Sleep, Wakefulness, and Overall Health



AUTHOR

Nina Mikirova, PhD

Life on earth has evolved under the daily rhythm of light and dark. Metabolic, physiological and behavioral processes exhibit 24-hour rhythms in most organisms, including humans.

Light, one of the most powerful environmental cues, enables the organisms to adapt to the 24-hour light-dark cycle. Photic signals (signals from light) are delivered from the eye to the brain and mediate the synchronization of the circadian clock system.

This regulation is driven by a small region in the anterior hypothalamus of the brain, known as the "circadian clock". This clock spontaneously synchronizes with the environmental light-dark cycle, thus enabling all organisms to adapt to and anticipate environmental changes. As a result, the circadian clock actively regulates sleep and wakefulness to occur in synchrony with the light-dark cycles. Indeed, our internal clock is our best morning alarm clock, since it shuts off melatonin production and boosts cortisol secretion and heart rate 2-3 hours prior to awakening.



Previously, humans tended to conduct their daily activities according to the sun's cycle: rising at sunrise and going to bed at sunset. The internal circadian clock and sleep-wake homeostasis regulate and organize human brain function, physiology and behavior so that wakefulness and its associated functions are optimal during the solar day, and so that sleep and its related functions are optimal at night. The circadian clock influences hunger, digestion, sugar and fat metabolism, hormonal secretions, body temperature and mood.

Disturbed circadian rhythms are known to be closely related to many diseases, including sleep disorders.

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Contact the Editor

Please send any comments or suggestions to

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Thank you for reading,



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Zauderer
Editor

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Sleep disorders include **chronic insomnias**, which are associated with an internal clock that runs slower or faster than the normal sleep phase syndrome, **periodic insomnias**, due to disturbances in light perception (non-24-hour sleep-wake syndrome and sleep disturbances in blind individuals), and **temporary insomnias**, which are due to social circumstances (jet lag and shift-work sleep disorder).

According to the Centers for Disease Control and Prevention and the Institute of Medicine of the National Academies, insufficient sleep has become a public health epidemic.

APPROXIMATELY 50-70 MILLION ADULTS (20 YEARS OR OLDER) SUFFER FROM SOME DISORDER OF SLEEP AND WAKEFULNESS, HINDERING DAILY FUNCTIONING AND ADVERSELY AFFECTING HEALTH AND LONGEVITY.

Treatment of circadian rhythm disorders, whether precipitated by intrinsic factors (e.g., sleep disorders, blindness, mental disorders, aging) or by extrinsic factors (e.g. shift work and jet-lag) has led to the development of new types of agents called **chronobiotics**, of which melatonin is the prototype. The term 'chronobiotic' is defined as a substance capable of shifting the phase of the circadian time system, thus regulating circadian rhythms. Melatonin administration synchronizes the sleep-wake cycle in blind people and in individuals suffering from delayed sleep phase syndrome, such as with jet-lag and shift-working.

Melatonin is synthesized from the amino acid tryptophan and is secreted in high amounts into the blood only in darkness (nighttime) by the pineal gland. Humans typically initiate sleep shortly after the rise of melatonin levels and awaken shortly after the fall of melatonin levels. The best quality sleep occurs at night when melatonin levels are high.

Daily melatonin production decreases with age, and in several pathologies, attaining its lowest values in Alzheimer's dementia patients. Due to decreased melatonin production, about 45% of dementia patients have severe disruptions in their sleep-wakefulness cycle.

Melatonin and cancer risk: does light at night compromise physiologic cancer protection by lowering serum melatonin levels?

Light is the primary stimulus to the disruption of melatonin rhythms. Melatonin production in humans decreases when people are exposed to light at night. Since melatonin shows potential to decrease the growth of a variety of tumors, it is possible that lowered serum melatonin levels, caused by exposure to light at night, increase tumor development.

It has been estimated that about 20% of working persons have an occupation in a shift work system, including health service employees and policemen, among others. The shift work causes conflict with the "biological clock" because of required working hours. Cancer is the second leading cause of death in industrialized countries like the United States, where a significant number of workers engage in shift work, making a hypothesized relation between light exposure at night and cancer risk relevant.

Observational studies support an association between night work and cancer risk. The potential primary culprit for this observed association is the **lack of melatonin**, a cancer-

protective agent whose production is severely diminished in people exposed to light at night.

Environmental lighting powerfully alters release of melatonin, which typically peaks in the middle of the night: a profound melatonin reduction was observed in humans after 2 weeks of intermittent nightly exposure to light.

Thus, novel hypotheses were generated, proposing that the diminished function of the pineal gland might promote the development of breast cancer in humans. One of the initial theories hypothesized that melatonin suppression may lead to an increase in levels of reproductive hormones, particularly estradiol, thereby increasing the growth and proliferation of hormone-sensitive cells in the breast. Observational studies have supported that theory, indicating that women in occupations **that expose them to light at night do experience a higher risk of breast cancer, and blind women, who do not have the ability to experience lower melatonin levels because of their lack of receptivity to light, have a lower incidence of breast cancer.**

Studies fairly consistently report meaningful increases in breast cancer risk among postmenopausal women exposed to shift work. Two retrospective studies of flight attendants with occupational exposure to light at night linked the employment time to an increased risk of breast cancer.

Two nationwide record linkage studies and a retrospective case-control study associated night work with an approximately 50% higher risk of breast cancer.



Finally, the Nurses' Health Study, the only prospective study published that evaluated the association, observed a positive association of extended periods of rotating night work and breast cancer risk. In this study, night work was defined as the total number of years during which the nurses had worked rotating night shifts with at least three nights per month, in addition to days and evenings in that month. During 10 years of follow-up, 2441 cases of

breast cancer were documented among the 78,562 women in the study. A positive association between the numbers of years a woman had worked on rotating night shifts and breast cancer risk was observed.

Among postmenopausal women, the relative risk for breast cancer, controlling for all the major risk factors for breast cancer, was moderately increased after 1–14 and 15–29 years of rotating night shift work, and was further increased for those nurses who worked the night shift for 30 or more years, with similar risks for premenopausal women. Thus, in summary, observational studies seem to support the hypothesis that night work increases the risk for breast cancer.

Light at night and other cancers

Only a few observational studies have addressed the relationship between shift work and cancers, other than breast cancer. One study reported an increased risk of colorectal cancer in female radio and telegraph workers. Another study did not report

Continued on page 4

How to Get Better Sleep, Naturally

1



Turn off all electronics 1 hour before bed. Make your sleeping room as dark as possible. Get black-out

curtains and cover up all light sources (alarm clocks, phones, nightlights).

2



Limit caffeine intake (especially in the late afternoon and evening).

3



Take an Epsom salt bath before bed. Magnesium has a calming effect on the body and brain.

4



Do not exercise within 2 hours before going to bed. Exercise increases cortisol levels, which can keep you awake.

5



Limit stress-inducing activities 2 hours before bed. This can vary by person, but could include activities

such as: watching the news, doing job-related work, playing video games...etc.

15%
OFF

Nutrient Store Sleep Aid Sale



NaturalCalm
~~\$19.95~~ **\$16.96**

Natural Calm helps with both restoring a healthy magnesium level and balancing your calcium intake - the result of which is natural stress relief.



Melatonin Spray
~~\$17.95~~ **\$15.26**

Melatonin is a powerful hormone secreted by the pineal gland located in the brain. Its secretion is stimulated by the dark and inhibited by light, and it aids in the regulation of the body's circadian rhythm, or sleep-wake cycle.

the risks for colorectal cancer among the female Icelandic flight attendants, but described an elevated risk for tumors of the lymphatic system.

The Nurses' Health Study was used to explore the association between night work and colorectal cancer; 602 women were diagnosed with incident colorectal cancer during the 10 years of follow-up. In these women, those who worked 15 or more years on rotating night shifts were at a higher risk of colorectal cancer than were women who never worked rotating night shifts.

Cancer-Protective Effects of Melatonin

In recent years, an overwhelming amount of research has been devoted to exploring the cancer-protective properties of the hormone melatonin. Today, many of the cancer-preventative properties of melatonin have been fairly well-described, and evidence from experimental studies strongly suggests a link between melatonin and tumor suppression.

Some of the mechanisms by which melatonin has been shown to protect against cancer are:

1. Melatonin is believed to increase the expression of the tumor-suppressor gene p53. Cells lacking p53 have been shown to be genetically unstable and thus more prone to tumors.
2. In vitro studies support that melatonin has been shown to halt the spread of cancer for a variety of tumor cells.
3. Reports show that melatonin exhibits a growth-inhibitory effect on endometrial and ovarian cancer cell lines, Lewis lung carcinoma, prostate tumor cells, and intestinal tumors.
4. Several clinical trials confirm the potential of melatonin, either alone or in combination with standard therapy regimens, to generate a favorable response in the treatment of human cancers.

Daylight saving time shifts: leave clocks alone.

Many people, including myself, intensely dislike Daylight Saving Time. Frequent complaints are the inconvenience of changing many clocks and adjusting to a new sleep schedule. For most people, this is a mere nuisance, but some people with sleep disorders find this transition very difficult. Indeed, there is evidence that the frequency of auto accidents increases and work productivity decreases as people adjust to the time change. There is no proof that it saves energy.

In many developed countries daylight saving time was cancelled and clocks are not moved back and forward. There is one study that looks at the effect of daylight time shift on the incidence of acute myocardial infarction. To identify acute myocardial infarction incidence on specific dates, researchers used the Register of Information and Knowledge about Swedish Heart Intensive Care Admission, a national register of coronary care unit admissions in Sweden. They found an elevated incidence ratio of 1.039 (95% confidence interval, 1.003-1.075) for the first week after the spring clock shift forward.

Given the evidence from experimental studies supporting the ability of melatonin to slow the growth of cancer, it is theorized that exposure to light at night not only has an impact on breast cancer risk, but also may increase the risk of other cancers, primarily through the melatonin pathway. This has been posed previously without much further attention from the scientific community, but most recent evidence from observational studies supports such a link.



Struggling with Insomnia?

Dr. Charles Hinshaw will be hosting a **FREE** lunchtime lecture about how to overcome insomnia, and what you can do to get a good night's rest. For more information, visit: www.riordanclinic.org/events

WEDNESDAY, JUNE 14TH | NOON – 1:00PM



Paleo Nutter Butters

By Jackie Caldwell
grainfreewellness.com

Prep Time
15 Minutes

Cook Time
20 Minutes

Yield
12-14

Jackie's Tips:

If you warm honey for about 15 seconds it will mix into your batter much easier.

Cashew Butter mixes better at room temperature so set out for 30 minutes before baking.

Toasting nuts is an extra step, but so worth it! The flavor of the nuts changes so much when they are toasted. You can toast nuts in a saute pan, or in the oven. I always keep some toasted nuts on hand for baking, topper for salads...you will find all kinds of ways to use them!

Ingredients

- 1 & 1/2 cups finely ground blanched almond flour
- 1/2 cup creamy cashew butter
- 3/4 tsp baking soda
- 1/4 tsp fine sea salt
- 1 tsp organic vanilla extract
- 2 large eggs
- 1/3 cup warmed honey (warm for about 10-15 seconds in microwave)
- 1/2 cup to 3/4 cup mini dark chocolate chips.
- 1/2 cup toasted chopped walnuts

Instructions

1. Preheat oven to 350 degrees and grease a 8" x 8" pan.
2. If you are going to toast your walnuts, do that now. Toasting is an extra, optional step, but I think it's worth it. Put walnuts in a small sauté pan on medium heat. Stir and watch closely for about 5 minutes. Transfer to a cutting board to cool before chopping.
3. You can use a bowl or a food processor to mix these Nutter Butters up.
4. Add flour, cashew butter, baking soda and sea salt to food processor. Pulse until mixed.
5. Add in eggs, vanilla, warmed honey and pulse until mixed.
6. Remove blade and fold in dark chocolate chips and chopped walnuts.
7. You can add some dark chocolate chips on top for decoration.
8. Bake for 20-22 minutes or until tester comes out clean.
9. Let cool and serve!
10. These will store on the counter for 2 days, then move to the fridge. They are really good cold too!

Clinic Special

Magnesium injections on sale for \$17.25*



*Must be a current Riordan Clinic patient with a doctor's order to get injections.

15%
OFF

CBD Hemp Oils



Comfort Balm Regular

~~\$24.95~~ **\$21.21**

Comfort Balm is a blend of hemp, Arnica Extract and Seven essential oils that provides fast-acting, warming relief.



Restore Calm Regular

~~\$39.95~~ **\$33.96**

Restore Calm6 Regular

~~\$68.95~~ **\$58.61**

Restore Calm is a delicious, easy-to-digest formula of non-psychoactive hemp oil extracts that promote a general sense of wellbeing. Available in both a 1oz bottle, and a .33 oz bottle of 6x concentrate.

STORE.RIORDANCLINIC.ORG

One Co-Learner's Journey with Lyme Disease and Chronic Pain

I may not be running any races or even walking all that well yet, but what I can say for sure is that my digestion is night-and-day better, my pain level is down from 7.5 to maybe 2 on a very good day and I don't get sick from bronchitis like I used to.

BEST OF ALL, MY LATEST BLOOD TESTS ARE ASTONISHING EVEN TO THE REGULAR DOCTORS FOR HOW GOOD THEY LOOK, COMPARED TO THE IMBALANCES AND DEFICIENCIES OF THREE YEARS AGO, BEFORE I STARTED AT THE RIORDAN CLINIC IN WICHITA, KANSAS.

My diagnosis at that time, having just been released from a nursing home after my second broken leg, were: Lyme disease, multiple sclerosis, osteoporosis and any number of other maladies regarding digestion, chronic pain and a history of breast cancer. Regular doctors could think of nothing to do for Lyme disease and only Avonex injections for MS. The breast cancer was treated with a bilateral mastectomy and has not recurred. The rest of it, as they put it -- "at my age"-- I should just learn to live with. Fortunately for me, I have a good caregiver who found the Riordan Clinic on the Internet and another who was willing to drive the 600 miles to help me get there.

So the story of exceptional lab testing, beyond what regular doctors do, and supplementation, over and above what anybody else will prescribe, got its start. Recommended treatments began with intravenous vitamin C, which I managed to tolerate for about six weeks until my veins broke down. Then, unable to consider the installation of a PICC line without medical support, I was reassured that I could heal just as well with high dose supplementation by mouth. It was just going to happen more slowly. I said I was fine with slowly and so we stocked up and started metering out the medicine.

It was, and continues to be, a complex regimen requiring many adjustments to diet and dosage based on what my body can handle, but the quarterly blood tests were showing results. Again, I am fortunate to have a caregiver who is knowledgeable in biochemistry and vitamin-powered healing. She supports my hope that the Riordan Clinic is right and that diseases such as Lyme, MS and cancer can be healed by the body itself, if the body gets well enough to handle eviction of such invaders. She is also the one who keeps track of my daily medication schedule, empties out the capsules as powders (since I choke on pills), and sees to it that I have the right food available.

Upcoming Events

For more information or to register for any of these events, please call 316-682-3100 or email: reservations@riordanclinic.org.

Essential Oils: How to Upgrade Your Medicine Cabinet

Friday, June 2nd | 3:00 – 4:00pm

Cost: \$5

Guest speaker, Dr. Carmen Meadows, will talk about how to use essential oils as a natural and effective alternative for many of the common, over-the-counter medications we keep in our medicine cabinet. We will make an all-natural sunscreen with essential oils just in time for summer!



Food as Medicine

Wednesday, June 7th

11:30am – 1:30pm

Cost: FREE

This in-depth course will connect the dots and address some

fundamental questions behind how our diet impacts our health and well-being and how it contributes to the progression of chronic disease. **PLEASE NOTE:** This course is available in-person at the Wichita campus, and online. For more information please visit: riordanclinic.org/food-as-medicine

Food is another matter of great importance, and since the Riordan Clinic tests to determine one's sensitivities and allergies, there is a long and helpful list of foods to avoid and foods to use -- a list which is currently pasted to the front of my refrigerator for reference. A lot of it my caregiver already knew; some of it she has learned along with me. All of it, along with the digestive enzymes, Repairvite healing powders and liposomal vitamins has redounded, as they said it would, to my great digestive benefit. And since digestion is central to just about everything else to do with healing, living and staying healthy, this new absence of heartburn, regurgitation, intestinal gas and overall indigestion is a complete turnaround. Now my body can access the nutrition it needs, my sleep cycle can benefit from this reduction in pain and my overall energy, creativity and optimistic outlook -- once seemingly lost and gone forever -- has slowly and steadily begun to return.

My regular doctors -- general practitioner, internist, neurologist and oncologist -- won't talk about vitamins or alternative healthcare and refuse to acknowledge this work being accomplished at the Riordan Clinic and elsewhere. They insist that such clinics sell the products they say will cure the deficiencies they diagnose and therefore can't be trusted with anything but their own self-interest. However, our experience has been that there is no hard sell. If we can find the same supplementation they offer from a less expensive and equally reliable source we are welcome to do so and if we test for genomic patterns and add on more ideas for detoxing, for example.

I don't get rejected as a patient the way I have been by "regular" doctors for daring to think on my own. In fact, my Riordan doctors are themselves familiar with genomes and are happy to include all such new information into my program! For everything to do with my overall improvement, I am grateful to Dr. Mike Bauerschmidt, who did my first intake; to Dr. Jennifer Mead, who continues to supervise my progress and to Dr. Ron Hunninghake, who oversees medical testing.

I WILL THEREFORE KEEP ON TAKING TRUSTED VITAMIN, MINERAL AND ENZYME FORMULATIONS; EATING LOTS OF GREENS, WILD GAME AND ROOT VEGETABLES; DOING WATER AEROBICS IN MY THERAPY TUB, AND TRUSTING MY BODY TO DO WHAT THE RIORDAN CLINIC SAYS IT CAN DO: GET WELL!

Thank you,
Norma S.



For more information or to register for any of these events, please call 316-682-3100 or email: reservations@riordanclinic.org.

Upcoming Events

How to Overcome Insomnia and Get Better Quality Sleep

Wednesday, June 14th | Noon – 1:00pm

Dr. Charles Hinshaw

Cost: FREE*

Roughly 60 million Americans are affected by a sleep disorder each year. Dr. Hinshaw will discuss what a sleepless night could be indicating about your health. He will also talk about what you can do to get a good night's rest, every night.

*Complimentary light refreshments will be served

You Want Me to Drink What?! How and why to make your own Kombucha.

Friday, June 30th | 2:00 – 3:00pm

Dr. Dustin Moffitt

Cost: \$10

Join Dr. Moffitt as he will be discussing all things kombucha, a fermented tea drink. He will give a history of the drink, explain health benefits, and describe how to make your own at home. We will also be sampling a variety of kombucha drinks, so if you are new to the taste and health benefits of this fermented drink this is the perfect time to learn!

Welcome Dr. Moffitt



The Riordan Clinic is excited to welcome Dr. Dustin Moffitt as the primary doctor at the Hays location. Dr. Moffitt is an experienced naturopathic doctor who specializes in regenerative injection techniques, pain management, sports rehabilitation, chronic illness, functional medicine, and weight loss.

I asked Dr. Moffitt to tell us a bit about himself:

WHERE ARE YOU FROM ORIGINALLY?

I was born in Wichita, KS. However I grew up 6 miles outside of Whitewater, Kansas on small 16 acre farm. Graduated from Frederic Remington High School. After that I moved on to graduate from Wichita State University.

HOW DID YOU GET INTO NATUROPATHIC MEDICINE?

I have always wanted to go on to become a doctor, however originally I was heading for allopathic. Through my own health issues and that of close friends and family, I saw a lack of care coming from the conventional medical system. Through my searches for a better option I discovered naturopathic medicine and could not be happier with the outcome.

HOW IS A NATUROPATH THE SAME/DIFFERENT FROM A CONVENTIONAL MEDICAL DOCTOR?

Conventional medicine is very symptom focused. Often treating whatever the current exacerbation is without ever thinking what the original cause was. For example, people struggling from chronic allergies or stomach issues. Naturopathic medicine likes to take a whole person and environmental approach to the situation and look at why. We often have longer appointments due to the extensive amount of questioning and detective work to identify the root of the cause. Maybe those allergies were because that person lived in a moldy home, was eating foods they are allergic to, or have a nutritional deficiency. Regardless of what it is, we do our best to identify it.

WHAT DO YOU LIKE TO DO FOR FUN?

I like to move! Every way, shape, or form. I like to work out in the gym, go trail running, mountain biking, garden, etc. If it requires movement and physical activity, I am always ready!

WHAT IS YOUR PERFECT MEAL?

The perfect meal is one that doesn't take much time to prepare, yet provides all the needed nutrition to fuel my body for my next adventure. I love vegetables and how they make my body feel. That being said, I still enjoy a well thought out grass fed hamburger with veggies!



Whether we realize it or not, we are influenced by how food looks. We are attracted to food with vibrant color, which is why food companies add artificial food dyes to processed food to make it more appealing to us! The reason we are attracted to color is because foods that are colorful are rich in something called phytonutrients (the prefix phyto means "plant"). These phytonutrients are the rich colors that protect plants from the sun's UV rays, which mean they also have a protective effect in our bodies when we eat them.



AUTHOR

Anne Zauderer, DC

Some examples of these color nutrients are:

- **Beta carotene** – found in orange fruits and vegetables such as sweet potatoes, carrots, pumpkin
- **Lutein** – found in green vegetables such as spinach, kale, Swiss chard, zucchini, and Brussel sprouts
- **Lycopene** – found in red fruits and vegetables such as tomatoes, watermelon, guava, grapefruits, papaya, and apricots

Aim to get as many colors in your diet per day as you can. Great ways to do this are with fresh salads and smoothies. I always get excited when I am preparing a meal and chopping vegetables and they stain my hands with color. I know those are the super foods with rich phytonutrients!

Summer is a great season to experiment with new fruits and vegetables because there are so many fresh ones from which to choose. Head out to a local farmer's market and try some of these colorful foods: blueberries, strawberries, raspberries, spinach, kale, sweet potatoes, beets, tomatoes, Brussel sprouts, broccoli, bell peppers, zucchini, oranges, grapes, and cherries.

If you are interested in knowing your own phytonutrient status, you can measure the color nutrients listed above through the Bio-Center Laboratory at the Riordan Clinic. You can walk-in without a doctor's order and get these nutrients measured.

I want to hear from you on how your results are going with the monthly challenge!

Email me at newseditor@riordanclinic.org to let me know about your progress, and to get your name entered in our monthly random giveaways for those participating in the challenge.