



Peripheral Neuropathy and Neuropathic Pain in Sjögren's

by Constantine Farmakidis, MD

Before proceeding into detail about neuropathy in Sjögren's, I would like to provide some introductory information for readers. Sjögren's is a chronic, autoimmune, inflammatory condition that leads to the classic clinical presentation of dry eyes and dry mouth or "sicca" symptoms, which is a form of the Latin word *siccus* that means dry. However,

beyond "sicca" symptoms, Sjögren's can manifest outside of the salivary and tear glands. This is known as extraglandular involvement which can be notably variable in Sjögren's and can affect the lungs, heart, gastrointestinal system, urogenital systems as well as the central and peripheral nervous systems. The central nervous system is comprised of the brain and spinal cord, whereas the peripheral nervous system is comprised of peripheral nerve structures that extend from the spinal cord down to the hands and feet.

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Letter From Your CEO, Steven Taylor



Steven Taylor, CEO SSF

As another year comes to an end, I start to reminisce about the past year and what the Sjögren's Syndrome Foundation has accomplished.

As you all know, the SSF was founded by a patient for patients, and the SSF remains committed to ensuring that all patients benefit from our work! We also work hard to ensure that the patient voice is in every meeting, every conference and every research decision. We want to make sure the donations we are so thankful to receive, are going to projects and initiatives that patients will find helpful, useful and empowering.

This past year, the SSF has been proud to achieve so many advancements in Sjögren's – as we march even closer to finally having a ther-

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A major component of the peripheral nervous system is peripheral nerves. One can perhaps conceptualize them as two-way electrical wires that carry information downstream to the limbs and upstream to the spinal cord. The core of the nerves is comprised of many thin and elongated nerve cell components that are known as axons. Axons are highly electrically excitable and can conduct electrical impulses as signals in the nervous system. To build on the wire analogy, axons can be thought of as the copper wire at the center of electrical cable. Myelin is the substance that provides insulation and support to the axons. It facilitates the transmission of electrical impulses along nerves and can be conceived as the familiar plastic covering of electrical wires.

Neuropathies are diseases that compromise the structure and function of peripheral nerves. They have a large number of potential causes. Diabetes is by far the most common cause of neuropathy and is an example of a systemic medical illness that can cause neuropathy. Notably 20-30% of neuropathies do not have an identified cause and are termed idiopathic or cryptogenic. Other causes of neuropathy include hereditary neuropathy that runs in families, neuropathy secondary to exposure to environmental toxins such as alcohol or medications, neuropathy that occurs due to nutritional deficiency such as vitamin B12 deficiency, and neuropathies that occur secondary to autoimmune disease that primarily attack peripheral nerves. The classic examples of autoimmune illnesses that primarily attack the nerves are Guillain Baré Syndrome (GBS) and chronic inflammatory demyelinating polyneuropathy (CIDP).

Other Diagnosed Health Conditions for Sjögren's Patients

There are many known comorbidities or manifestations of Sjögren's that can occur in conjunction with the disease. Survey respondents reported having been diagnosed by health care provider with an average of five other health conditions, including Gastroesophageal Reflux Disease (GERD) (45%), Raynaud's (38%), Neuropathy (38%), Sinusitis (33%), Hypertension (31%), and Irritable Bowel Syndrome (31%).



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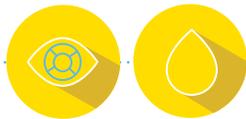


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Indication

Xiidra[®] (lifitegrast ophthalmic solution) 5% is indicated for the treatment of signs and symptoms of dry eye disease (DED).

Important Safety Information

Xiidra is contraindicated in patients with known hypersensitivity to lifitegrast or to any of the other ingredients.

In clinical trials, the most common adverse reactions reported in 5-25% of patients were instillation site irritation, dysgeusia and reduced visual acuity. Other adverse reactions reported in 1% to 5% of the patients were blurred vision, conjunctival hyperemia, eye irritation, headache, increased lacrimation, eye discharge, eye discomfort, eye pruritus and sinusitis.

To avoid the potential for eye injury or contamination of the solution, patients should not touch the tip of the single-use container to their eye or to any surface.

Contact lenses should be removed prior to the administration of Xiidra and may be reinserted 15 minutes following administration.

Safety and efficacy in pediatric patients below the age of 17 years have not been established.

For additional safety information, see accompanying Brief Summary of Safety Information on the adjacent page and Full Prescribing Information on Xiidra-ECP.com.

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BRIEF SUMMARY:

Consult the Full Prescribing Information for complete product information.

INDICATIONS AND USAGE

Xiidra® (lifitegrast ophthalmic solution) 5% is indicated for the treatment of the signs and symptoms of dry eye disease (DED).

DOSAGE AND ADMINISTRATION

Instill one drop of Xiidra twice daily (approximately 12 hours apart) into each eye using a single-use container. Discard the single-use container immediately after using in each eye. Contact lenses should be removed prior to the administration of Xiidra and may be reinserted 15 minutes following administration.

CONTRAINDICATIONS

Xiidra is contraindicated in patients with known hypersensitivity to lifitegrast or to any of the other ingredients in the formulation.

ADVERSE REACTIONS

Clinical Trials Experience

Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in clinical studies of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. In five clinical studies of dry eye disease conducted with lifitegrast ophthalmic solution, 1401 patients received at least 1 dose of lifitegrast (1287 of which received lifitegrast 5%). The majority of patients (84%) had ≤ 3 months of treatment exposure. 170 patients were exposed to lifitegrast for approximately 12 months. The majority of the treated patients were female (77%). The most common adverse reactions reported in 5-25 % of patients were instillation site irritation, dysgeusia and reduced visual acuity. Other adverse reactions reported in 1% to 5% of the patients were blurred vision, conjunctival hyperemia, eye irritation, headache, increased lacrimation, eye discharge, eye discomfort, eye pruritus and sinusitis.

Postmarketing Experience

The following adverse reactions have been identified during postapproval use of Xiidra. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

Rare cases of hypersensitivity, including anaphylactic reaction, bronchospasm, respiratory distress, pharyngeal edema, swollen tongue, and urticaria have been reported. Eye swelling and rash have been reported.

USE IN SPECIFIC POPULATIONS

Pregnancy

There are no available data on Xiidra use in pregnant women to inform any drug associated risks. Intravenous (IV) administration of lifitegrast to pregnant rats, from pre-mating through gestation day 17, did not produce teratogenicity at clinically relevant systemic exposures. Intravenous administration of lifitegrast to pregnant rabbits during organogenesis produced an increased incidence of omphalocele at the lowest dose

tested, 3 mg/kg/day (400-fold the human plasma exposure at the recommended human ophthalmic dose [RHOD], based on the area under the curve [AUC] level). Since human systemic exposure to lifitegrast following ocular administration of Xiidra at the RHOD is low, the applicability of animal findings to the risk of Xiidra use in humans during pregnancy is unclear.

Animal Data

Lifitegrast administered daily by intravenous (IV) injection to rats, from pre-mating through gestation day 17, caused an increase in mean preimplantation loss and an increased incidence of several minor skeletal anomalies at 30 mg /kg / day, representing 5,400-fold the human plasma exposure at the RHOD of Xiidra, based on AUC. No teratogenicity was observed in the rat at 10 mg /kg /day (460-fold the human plasma exposure at the RHOD, based on AUC). In the rabbit, an increased incidence of omphalocele was observed at the lowest dose tested, 3 mg /kg /day (400-fold the human plasma exposure at the RHOD, based on AUC), when administered by IV injection daily from gestation days 7 through 19. A fetal No Observed Adverse Effect Level (NOAEL) was not identified in the rabbit.

Lactation

There are no data on the presence of lifitegrast in human milk, the effects on the breastfed infant, or the effects on milk production. However, systemic exposure to lifitegrast from ocular administration is low. The developmental and health benefits of breastfeeding should be considered, along with the mother's clinical need for Xiidra and any potential adverse effects on the breastfed child from Xiidra.

Pediatric Use

Safety and efficacy in pediatric patients below the age of 17 years have not been established.

Geriatric Use

No overall differences in safety or effectiveness have been observed between elderly and younger adult patients.

NONCLINICAL TOXICOLOGY

Carcinogenesis, Mutagenesis, Impairment of Fertility

Carcinogenesis: Animal studies have not been conducted to determine the carcinogenic potential of lifitegrast.

Mutagenesis: Lifitegrast was not mutagenic in the *in vitro* Ames assay. Lifitegrast was not clastogenic in the *in vivo* mouse micronucleus assay. In an *in vitro* chromosomal aberration assay using mammalian cells (Chinese hamster ovary cells), lifitegrast was positive at the highest concentration tested, without metabolic activation.

Impairment of fertility: Lifitegrast administered at intravenous (IV) doses of up to 30 mg/kg/day (5400-fold the human plasma exposure at the recommended human ophthalmic dose (RHOD) of lifitegrast ophthalmic solution, 5%) had no effect on fertility and reproductive performance in male and female treated rats.



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Research Grantees

SSF Awards 2018-2019 Research Grants

The Sjögren's Syndrome Foundation is excited to announce the selection of the 2018-2019 research grant recipients. After careful consideration of this year's outstanding pool of applicants, the research review committee has awarded four new research grants and renewed three excellent research grants from the 2017-2018 awardees.

2018-2019 Research Grant Recipients



Kimberly Jasmer McDonald, PhD
Postdoctoral Fellow, University of Missouri, Dept. of Biochemistry, Columbia, MO

Research Project
P2Y₂ Receptor as Therapeutic Target in a Sjögren's Syndrome Mouse Model

Abstract

Sjögren's is a chronic autoimmune exocrinopathy characterized by lymphocytic infiltration of the salivary and lacrimal glands. Chronic inflammation leads to salivary gland dysfunction and systemic effects including fibrosis, secondary autoimmune diseases, and lymphoma development. Using the NOD.H-2^{h4}, IFN γ ^{-/-}, CD28^{-/-} mouse model of Sjögren's, we explore the contributions of P2Y₂R-mediated inflammation to the Sjögren's phenotype. Our preliminary findings demonstrate that P2Y₂R antagonism improves salivation and diminishes inflammation in the submandibular gland (SMG). Additionally, functional P2Y₂R is expressed in SMG B cells. Through the nucleotide activation of P2Y₂R on infiltrating SMG B cells

and subsequent chemokine and cytokine release, we hypothesize that P2Y₂R might facilitate the recruitment of peripheral lymphocytes leading to salivary gland destruction, hyposalivation, and chronic inflammation. It is the goal of this proposal to elucidate the role P2Y₂R plays in infiltrating SMG B cell function and evaluate P2Y₂R as a novel therapeutic target for the treatment of Sjögren's.

Melodie Lynn Weller, PhD



Assistant Professor, University of Utah, School of Dentistry, Salt Lake City, UT

Research Project
The Impact of a Global Increase in Hepatitis Delta Virus (HDV) Exposure on the Incidence of Sjögren's Syndrome Diagnosis

Abstract

A viral infection has thought to be one of the triggers in the development of Sjögren's. Recently, we identified hepatitis delta virus (HDV) in Sjögren's salivary gland tissue and demonstrated the capacity of HDV to trigger a complete disease phenotype in vivo. Our focus now is to

“Peripheral Neuropathy” continued from page 2 ▼

So, having completed this overview of peripheral nerve structure and disease, how does Sjögren’s fit in? Sjögren’s, like diabetes, is another yet less common example of systemic disease that can cause peripheral neuropathy. The strength of the relationship between neuropathy and Sjögren’s has been studied around the world. In the last decade, groups from Greece, France and Spain have performed similar analyses of their Sjögren’s patient populations finding that the prevalence of neuropathy in their Sjögren’s patients is 1.8%, 25% and 10% respectively. The 2016 SSF *Living with Sjögren’s* survey found that 38% of patients reported being diagnosed with neuropathy.

So how does peripheral neuropathy present in patients with Sjögren’s?

The most common complaints patients have been numbness, tingling or pain in the feet. Some patients can have weakness as well. This type of predominantly sensory neuropathy is likely familiar to many who have family or acquaintances with diabetic polyneuropathy.

Much less common, but well recognized in Sjögren’s are neuropathies that can cause either severe imbalance (sensory neuronopathy); or isolated and one-sided facial numbness (pure sensory neuronopathy), or dysfunction along several peripheral nerves for example causing wrist drop and foot drop along with numbness in the affected limbs (mononeuropathy multiplex).

Should anyone with Sjögren’s suspect that they are starting to have neuropathy symptoms, they should alert their treating primary care doctor, internist or rheumatologist. Generally speaking, given that neuropathy in Sjögren’s may need specific treatment and further evaluation, a neurology consultation should be obtained. The objectives during a neurologic consultation are to obtain further history and search for other causes of neuropathy, to perform a neurologic examination, and to consider the need for blood work or testing of the electrical function of peripheral nerves and muscles with nerve conduction studies and electromyography (EMG). Furthermore, should nerve conduction studies come back normal, but neu-

ropathy is still suspected, then specialized testing may be indicated (3 mm punch skin biopsy) that allows a physical count of nerve fibers on a small piece of skin that is removed, stained to bring out nerve fibers, and evaluated under the microscope.

If a neuropathy is diagnosed in a patient with Sjögren’s, then how should it be managed?

The first question to answer is whether a medication that dampens or modulates the immune response is necessary to stop ongoing nerve injury. Many drugs can be used. Hydroxychloroquine sulfate, a medication commonly known as Plaquenil, may be adequate for chronic maintenance; or for an active and progressive neuropathy, substantial doses of corticosteroids (like prednisone) may be used to control the inflammatory process injuring peripheral nerves. Should immunosuppressive therapy be required long term, the goal will be to gradually substitute steroids with other medications that have a similar effect on the immune system, but do not have the severe side effects seen with long term steroid use. Medications that can be considered as steroid-sparing agents include azathioprine, mycophenolate mofetil, methotrexate and intravenous immunoglobulin among others. Physicians with experience using these drugs should be closely monitoring patients, as these drugs can have serious adverse events.

The second question to answer regarding treatment, is whether the neuropathy is causing nerve-related or neuropathic pain. If the answer is yes, then medications for symptomatic, day-to-day control of nerve pain may be indicated. Before trying these medications, there are a few guiding principles to consider:

- There is potential for significant improvement on these medications, but rarely do they make the pain disappear completely. In fact, it is probably more likely that the pain may get better by itself as part of the natural history of the neuropathy.
- A drug trial for a patient, to be a reliable test of effectiveness should last a few weeks (if tolerated), and each drug should be tried on an adequate dose.

- If benefit is obtained on one medication, the dose should be increased until maximal benefit is obtained, or dose dependent side effects occur.
- If one agent reaches a peak benefit but pain still breaks through a second drug can be added after your physician has helped weigh the risk of drug-drug interactions.
- An important factor to consider is that none of the usual medications used for neuropathic pain management are without side effects. Indeed, side effects are not altogether uncommon, and even though risk is not high, it increases when taking higher doses or when several drugs are used at the same time.
- For those doing tasks where high alertness is required, treatment should be individualized, and patients should receive specific counseling ahead of starting a new medication. As an example, a Transportation Security Administration airport luggage screener took doses of neuropathic pain medication after returning from work and before going to bed thus avoiding taking a dose before going to work in the morning.

There are two principal categories of neuropathic medications. There are antiseizure drugs that depress nerve excitability and thus modulate the pain response and there are antidepressants that selectively inhibit the reuptake of neurotransmitters from the gaps between neurons (synapses), thus also modulating the pain response. Gabapen-

Peripheral Neuropathy and Sjögren's Fast Facts

Q Can Sjögren's neuropathy cause pain?

A Yes, pain is a common symptom of neuropathy and it can be a prominent feature of the types of neuropathies more prevalent with Sjögren's.

Q Is the pain treatable?

A Yes, there are numerous medications available for nerve-related pain with moderate effect overall and working closely with a physician over time can help identify the most effective treatment regimen for you while minimizing medication side effects.

View more resources on Peripheral Neuropathy at: www.sjogrens.org

tin is a first line agent that is an example of an anti-seizure medications; and amitriptyline is another first line agent although from the antidepressant category. There are other first line agents, and numerous second and third line agents that your physician can help select and try based on your medical history. For patients that do not tolerate any drug taken by mouth, alternatives include lidocaine patches, capsaicin cream, and compounded analgesic ointments that can be applied to the painful area. As far as opioid therapy for patients in severe neuropathic pain, their use remains controversial and we do not use them in our practice.

Non-medication supportive treatments may have a role with symptom management in neuropathy and patients may experiment with these as they develop their own management plan. These strategies include wearing comfortable shoes and soft socks, using cold water compresses or baths (caution! hot compresses and baths can cause burns in neuropathy patients), biofeedback, cognitive behavioral therapy, physical therapy, exercise as tolerated and certainly pool-based exercise as it is very low impact.

In summary, patients with Sjögren's are at higher risk of peripheral nerve disease. The most common presentation of neuropathy in Sjögren's is a loss of feeling, tingling, pain, poor balance, and weakness that starts in the feet and slowly progresses up the legs. In addition, there are other rarer but also notable nerve disease presentations. If any such condition is suspected, medical attention should be sought with a rheumatologist or internist initially, and if neuropathy is still under suspicion a neurologic evaluation should be strongly considered. ■

“Letter from CEO” *continued from page 1* ▼apeutic on the market to treat Sjögren’s, as awareness of our disease is increasing and as healthcare professionals are finally starting to take notice of Sjögren’s and what to do for their patients!

Together, with your help, we have accomplished a great deal. Here is just a sampling of what we have done this past year.

Serving as the Voice of all Sjögren’s Patients

- The SSF has continued to serve as the voice for all Sjögren’s patients including women, men and children with Sjögren’s! From our 65 active support groups to our work in advocacy and patient engagement, the SSF ensures that the voice of a patient is always present!
- We are very proud of all the patients that have given their voice and/or face to our awareness campaigns, helping others to see that Sjögren’s affects all types of people.
- This past year – we had some of the most successful awareness campaigns ever and we are finally seeing an increase in the recognition of Sjögren’s!

Finding new therapeutics for Sjögren’s

- The SSF has expanded our efforts in working with pharmaceutical companies that are investigating potential therapies for Sjögren’s. We are working alongside 11 companies who have chosen Sjögren’s as a potential interest and whom we believe will find the answer to a new therapeutic to treat Sjögren’s!
- The SSF has been on the forefront of ensuring that these companies are engaging patients, early on, in the development of their clinical trials. Our goal is to ensure patients ideas are heard in how a clinical trial should be conducted as well as having these companies understand what patients ultimately want from a therapy.

- Our work is far from over in Clinical Trials, but we are very excited about how far we have come.

Furthering Sjögren’s Clinical Practice Guidelines

- The SSF continued our work on phase 2 of the Rheumatology and Oral Clinical Practice Guidelines. The guidelines will focus on dental caries restoration as well as lymphoma, pulmonary complications, neuropathies and vasculitis.
- We have recruited nearly 100 healthcare providers to assist us in these efforts to ensure that we have a breadth

of knowledge helping to write our guidelines. We have worked to ensure that both rheumatologists and specialists (i.e. pulmonologists, neurologists and oncologists) are involved in every committee. This will help us better understand the intricacies of each of these manifestations.

- Stay tuned for exciting next steps in 2019, as we get closer to having our guidelines published and ready for our patients to distribute to their practicing physicians and dentists.

As CEO, I am very proud of the movement we have made in 2018 and I am looking forward to 2019. We have come a long way in our 35-year history, but I believe these past five years have been the most exciting ever!

I know you join with me in applauding the thousands of volunteers that help to support our work. From the healthcare providers who lend their expertise to our Sjögren’s patients that lend their voices or their time to our efforts, we would not be where we are without all of them!

I hope you will consider joining us in 2019 and helping us move the bar even higher! Together, we can do great things!


Steven Taylor,
Chief Executive Officer

“There is no medicine like hope, no incentive so great, and no tonic so powerful as expectation of something tomorrow.” — Orison Swett Marden

SSF in Action!

Creating a Sjögren's Online Community



On September 20th, the Sjögren's Syndrome Foundation (SSF) was invited to represent Smart Patients at an impactful conference to explore the current state of advocacy and community-initiated research in Washington, DC. The conference was hosted by the Genetic Alliance and focused on the infrastructure that empowers communities. Ben Basloe, Vice President of Philanthropy, had the pleasure of representing the SSF and speaking on behalf of Smart Patients.

Smart Patients is an online community for patients and families affected by a variety of illnesses and launched with the goal of providing a safe forum where patients and families can learn from each other and support each other. Smart Patients believes that patients are the most underutilized resource in healthcare and when they become

experts in their condition, their knowledge improves the care that they receive. The Sjögren's Syndrome Foundation shares this belief, which is why SSF CEO, Steven Taylor, decided to partner with Smart Patients to provide Sjögren's patients with a managed peer support service.

The Sjögren's community on Smart Patients has grown consistently and currently has a little over 1,000 monthly active members and over 3,000 monthly posts. What stands out the most though is the qualitative nature of the community and the wide range of topics that are discussed. A consistent theme in the community is the importance of feeling like they are not alone. Loneliness is probably one of the most under-treated symptoms in healthcare and of course peers are often better

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“Research Grantees” *continued from page 5* ▼

define how patients are being exposed to HDV. Preliminary HDV epidemiological studies have identified a significant increase in diagnosis across three continents and are suggestive of a change in viral transmission patterns. We hypothesize that this increase in global HDV exposure may lead to increased Sjögren’s development in susceptible populations. This discovery in connection with the novel HDV profile observed in Sjögren’s patients is highly innovative and warrants immediate investigation. Therefore, we have designed two studies to perform cross-correlative analysis between HDV and Sjögren’s diagnoses within the Utah population. These studies will provide the foundation for advancement to clinical trials.



Yee Ling Wu, PhD
Assistant Professor, Loyola University Chicago, Dept. of Microbiology and Immunology, Maywood, IL.

Research Project
Genetic and Phenotypic Polymorphisms of Complement C4 in the Pathogenesis of Sjögren’s Syndrome

Abstract

Low levels of complement C4 protein are often observed in Sjögren’s and are associated with cryoglobulinemia and lymphoma. Genetic deficiency and low gene copy numbers of complement C4

have been shown to be an important risk factor for lupus. Activation of C4 protein during inflammation consumes C4 protein and mediates tissue injuries. We hypothesize that C4 genetic and protein polymorphisms are engaged in disease predisposition and in modulating the clinical presentation of Sjögren’s. We will analyze patient samples using accurate molecular assays for determining C4 gene copy numbers, immunoassays for activated complement protein products and transcriptomic analyses to 1) determine the cause of low C4 in Sjögren’s, and 2) evaluate the utility of combining genetic stratification of C4 and new protein markers in the diagnosis and management of Sjögren’s.



John Robert Kelly, DDS, MS, DMedSc
Professor, UCONN Health, Farmington, CT

Research Project
Artificial Salivary Gland Dental Implant Development

Abstract

Our research group proposes to treat xerostomia with an implantable device for continuous relief of chronic dry mouth through the development of a dental implant to harvest and filter the self-renewing fluid within the marrow space of the jaw bone and to release the filtered fluid

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You Stood Up!

Miss Massachusetts USA 2018: Allissa Latham

Miss Massachusetts USA 2018, Allissa Latham, chose to use her pageant platform to help others better understand the complexity of Sjögren's. As a patient who was diagnosed with the disease at 11 years old, it's a topic that is close to her heart.

Allissa first became involved with the Sjögren's Syndrome Foundation (SSF) through the pediatric support group and learned the value of being able to talk about her disease. This is why it was an easy decision to use her national spotlight to increase awareness of Sjögren's.

Once crowned Miss Massachusetts, Allissa started preparations to compete in Miss USA. In her official Miss USA video titled, "Meet Miss Massachusetts," she decided to share her story with the world and let others know that they were not alone. When asked what she wanted to convey in the video, she said:

"The primary message of my Sjögren's journey is that those impacted with Sjögren's can still go on to

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Message from Miss Massachusetts

"Until there is a cure, as patients, we will always have days where we curse the existence of Sjögren's. With that, we should remember to be kind to ourselves, even on our bad days. Make time to rest, relax, and do those things that we enjoy. We should keep a healthy diet and stay active physically as much as we can, and work with our physicians to promote the healthiest version of ourselves. We are the captains of our ship and the makers of our destiny. Let us continue to do research as a patient, help educate our providers and those around us, and continue to support finding a cure.

Always let your voice be heard and never be ashamed of this life you have been presented with, for we are given the life we have because we are strong enough to live it."

“Research Grantees” *continued from page 10* ▼

into the mouth as substitute saliva. We proposed design, test and refinement prototypes of this implant system. Much of the work will be done at 3-5x scale with the intention of future miniaturization to anatomic size. This work will emphasize the primary performance requirement of repetitively pumping fluid through the implant at force consistent with tooth contact and mastication. Milestones include design, prototype and testing with at least 0.2-0.3 ml/min drawn from bone marrow space analogues.





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- Reduces risk of tooth decay
- Freshens breath
- Reduces plaque by 50%+
- **Mild-Mint and Mint-Free** available

XyliMelts are available at:
  
Available March 2018 

Clinicians Report[®], March 2016 Dry Mouth Survey Results

In a survey of 1168 dentists about effectiveness of dry mouth remedies, dentists who had experience with OraCoat XyliMelts for dry mouth rated it as more effective than any other non-prescription remedy for dry mouth.*

OraCoat XyliGel
For patients with very low levels of saliva or who prefer a gel

- pH 7.4 neutralizes acids

Unlike other oral moisturizers, XyliMelts and XyliGel are non-acidic and will not harm teeth.



XyliGel is available at: 

Patient samples available.
Call 877-672-6541 or visit www.oracoat.com

*Survey of 1168 dentists, March 2016 Clinicians Report[®], an independent, non-profit, dental education and product testing foundation. Citation available at oracoat.com
†These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
‡In people with dry mouth who use 2 discs while sleeping and 4 more during the day.

Renewed 2017-2018 Research Awards

Anat Galor, MD, MSPH

Associate Professor of Clinical Ophthalmology, Bascom Palmer Eye Institute, University of Miami, Miami, FL.

Research Project

Fecal Microbiota Transplant in Sjögren's Syndrome

Description

This study aims to study the feasibility and efficacy of fecal microbiota transplant (FMT) in Sjögren's patients, particularly, whether FMT can improve the dry eye phenotype.

Daniela Cihakova, MD, PhD

Associate Professor of Immunology; Associate Director of Immunology Laboratory; Director of WHO Collaborating Center, Dept. of Pathology, Johns Hopkins University, Baltimore, MD

Research Project

Epithelial cells and Innate Lymphoid Cells' Collaborative Role in the Pathogenesis of Primary Sjögren's Syndrome

Description

This translational project aims to investigate the pathogenic features of salivary epithelial cells and innate lymphoid cells on Sjögren's in humans and murine models and has the potential to lead to new therapeutic and diagnostic approaches.

Danielle Marie Robertson, BS, OD, PhD

Associate Professor, University of Texas Southwestern Medical Center, Department of Ophthalmology, Dallas, TX

Research Project

Comparative Structural and Molecular Analysis of Tear and Salivary Derived Exosomes in Sjögren's Syndrome

Description

This project is testing the hypothesis that saliva and tear derived from exosomes will contain biomarkers unique to patients with Sjögren's. This hypothesis is being tested by characterizing the ultrastructural biology and molecular signature of saliva and tear derived exosomes from women with Sjögren's compared to age-matched healthy controls using cryo-electron microscopy and next generation RNA-sequencing. ■



Increased Hospitalization Rates Seen in Sjögren's patients

Researchers have found that patients with Sjögren's had significantly higher hospitalization rates compared to the general population. This retrospective population-based cohort study identified Sjögren's patients and controls using records found between 1976 and 2015. Hospitalization records spanned 1995 to 2016. In all, 160 Sjögren's patients experiencing 385 hospitalizations and accounting for 1,592 person years of follow-up and 466 controls experiencing 899 hospitalizations and accounting for 4,660 person years of follow-up were identified. Specifically, increases in hospitalization rates were seen for endocrine, nutritional and metabolic diseases and immunity disorders (RR 1.82, 95% CI 1.08 to 2.98), musculoskeletal system and connective tissue diseases (RR 1.49, 95% CI 1.05 to 2.05) and injuries and poisoning (RR 1.46, 95% CI 1.01 to 2.06).

Citation

Maciel G, Servioli L, Nannini C, Berti A, Crowson CS, Achenbach SJ, Matteson EL, Cornec D. Hospitalisation rates among patients with primary Sjögren's syndrome: a population-based study, 1995-2016. *RMD Open* 2018; 4:e000575. doi: 10.1136/rmdopen-2017-000575

“You Stood Up” *continued from page 11* ▼

reach their goals and be successful in life. For me, I always had the dream of competing at Miss USA. In middle school and high school, I competed in pageants with a swollen left parotid gland the size of a tangerine and I won most of them. The size of my gland diminished with rituximab treatment over the course of 4+ years. However, I am sure that if my gland decided it wanted to swell before Miss USA that I would have taken the stage with my hair pulled back, and my head held high.

It was very difficult to have a swollen parotid gland as a child and even through some of my college years. Sharing the photos of my gland and treatments on national television was quite

emotional for me, but I felt that it was part of my story that needed to be shared with the nation. Sjögren’s is an auto-immune disease, and as patients we are not products of Sjögren’s but owners of it. Through the treatments, profound fatigue, unprecedented dry mouth, and dry eyes, we are still able to conquer the day and our goals. I am currently not only the reigning Miss Massachusetts USA 2018, but an MBA student, a full time Integration Architect for a healthcare technology company and a Sjögren’s warrior.”

The SSF would like to thank Allissa for being a Sjögren’s warrior and stepping up to help all patients! If you would like information about the SSF pediatric support group, please contact the Foundation at info@sjogrens.org or call (301) 530-4420. ■

Did you notice our extended issue?

The Sjögren’s Syndrome Foundation combines our November and December issue of *The Moisture Seekers*. This extended issue has more pages to provide all the great information while cutting down on mailings you receive each year during this busy time of year. We hope you enjoy this new November/December issue and have a joyful holiday season and healthy New Year.



“SSF in Action” *continued from page 9* ▼

equipped to support each other in this way than providers are.

From the stand-point of people-driven research, the hope is that with Smart Patients’ focus on engaging patients and families to learn from each other that it will in turn drive research. A specific example is that Smart Patients created a clinical trial finder. It was designed, primarily to make it easier for patients to start conversations with each other about trials. A common scenario for example is someone asking others what the experience of being in a clinical trial is like. By sharing

information about the clinical trials, more patients may become comfortable and/or interested in participating in a trial. In addition, patients are hopeful that as everyone contributes their wide variety of experiences, that there may be some vital data gathered for researchers. The communities are quite pro-science and both the SSF and Smart Patients are open to future collaborations in particular related to continuing to advance patient-driven research.

If you want to learn more or to join the SSF Sjögren’s community on Smart Patients, please visit www.smartpatients.com/communities/sjogrens. ■

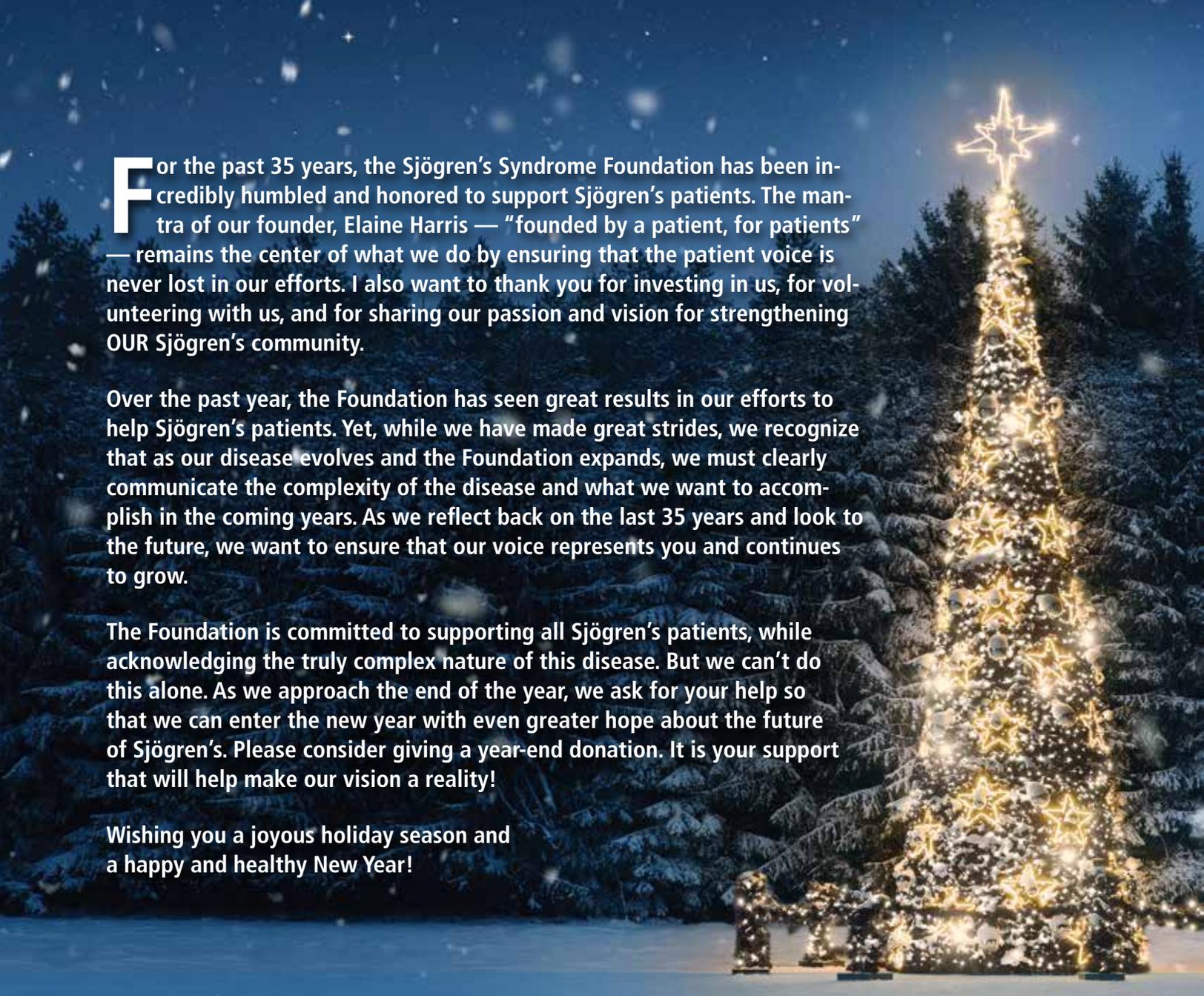
Smart Patients

Sjögren's Community
in partnership with the
Sjögren's Syndrome
Foundation

We're having honest conversations
about Sjögren's and our health. Join
SSF members in our online community:

smartpatients.com/communities/sjogrens





For the past 35 years, the Sjögren's Syndrome Foundation has been incredibly humbled and honored to support Sjögren's patients. The mantra of our founder, Elaine Harris — "founded by a patient, for patients" — remains the center of what we do by ensuring that the patient voice is never lost in our efforts. I also want to thank you for investing in us, for volunteering with us, and for sharing our passion and vision for strengthening OUR Sjögren's community.

Over the past year, the Foundation has seen great results in our efforts to help Sjögren's patients. Yet, while we have made great strides, we recognize that as our disease evolves and the Foundation expands, we must clearly communicate the complexity of the disease and what we want to accomplish in the coming years. As we reflect back on the last 35 years and look to the future, we want to ensure that our voice represents you and continues to grow.

The Foundation is committed to supporting all Sjögren's patients, while acknowledging the truly complex nature of this disease. But we can't do this alone. As we approach the end of the year, we ask for your help so that we can enter the new year with even greater hope about the future of Sjögren's. Please consider giving a year-end donation. It is your support that will help make our vision a reality!

Wishing you a joyous holiday season and a happy and healthy New Year!

- Enclosed is my gift of \$ _____ to support the Foundation's initiatives and programs.
- I am interested in learning more about how to make a stock donation.
- Please send me information about listing the SSF in my will.

Thank you for your support of the Sjögren's Syndrome Foundation.

Mail to SSF, BB&T Bank · PO Box 890612 · Charlotte, NC 28289-0612 or Fax to: 301-530-4415

Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ E-mail _____

Enclosed is a check or money order (in U.S. funds only, drawn on a U.S. bank, net of all bank charges) **payable to SSF.**

MasterCard VISA Discover AmEx Card Number _____ Exp. Date _____

Signature _____ CC Security Code _____


in memoriam
In Memory of Cecilia Ann Williams

Cynthia and Emma Evans
 Ms. Lorna Everson and Family
 Ms. Gaynor Lowndes and Family
 Mr. Jacky Parry
 Ms. Christine Denning and Family
 Ms. Gwyneth Bevan and Family
 Celia Palm
 James and Lin Liddiard
 Nancy and Philip Ruhle
 Steven Morgan
 Helen Steers

In Memory of Anthony Sodl

John, Sr. and Doris Drabic
 Friends from Lehigh Office
 Mary Ann Bodnar

In Memory of Barbara Reilly

John and Carole Spidalette
 Teresa and Bill Egan

In Memory of Bill Griffin

Taylor Johnson

In Memory of Bonnie Charrier Beauboeuf

Mr. and Mrs. Dennis Anders
 Ken and Laurence Dwyer

In Memory of Bonnie M. Buss

Ron and Kathy Uhlenhopp
 Jennifer Jones Bausman
 Theresa Hurley

In Memory of Helen McManus

Charles McManus

In Memory of Frances Sepe

John and Celia Chianese

In Memory of Helen A Kinlan

Patrick V Kinlan

In Memory of Jean Field

Patricia Robinson and Sue Root

In Memory of Judy D Johnston

Howard Johnston

In Memory of Linda Bowman

GBN Boys Bowling Team
 The Repkin Family
 Lynne and David Avadek
 Merle A. Goldberg

In Memory of Norman Lesser

Ellie and Bernie Schinder

In Memory of Paul and Leonore Smith

The Smith Family Survivor's Trust (Bequest)

In Memory of Stephan Albert

Ellen and Jerry Reibstein

In Memory of Teresa Vitale

The Dieckmann Family
 Rob and Lauren Bendl
 Lockheed Martin Supply Chain Council
 Skip and Sherry Bennett

Brenda Garvin

Michael Vitale

Laura George

Alison and Greg Frank

Cheryl Carson

Carol Ferro

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Pete Bergen

Leo and Carol Ellis

Joe and Paula Botley

Monica and Scott Capuano

Brian Frasco

Melody Farley

Kim White

Marianne Scott

Yvonne Hodge, Dan Foley and the Space IT Staff


in honor
In Honor of Annika Rosenberg

Sharon Orr and the Orr Family Foundation

In Honor of Donna Gerken

Cindy Mayer

In Honor of Dr. Cheryl Levin

Sharon Orr and the Orr Family Foundation

In Honor of Gia Honor

Christopher and Victoria Marchand
 Donald W. Boyajian

In Honor of Harry Spiera, MD

Sonia Cotto, MD

In Honor of Joan Emmett

Xuan Thi and Thanh C Nguyen
 David and Evelyn Peltz

Anita Sharp Dowell and Willie Dowell Jr.

Ronald Yannitello

In Honor of Jordan Linn

Stan Sprung

In Honor of Laura Mancuso

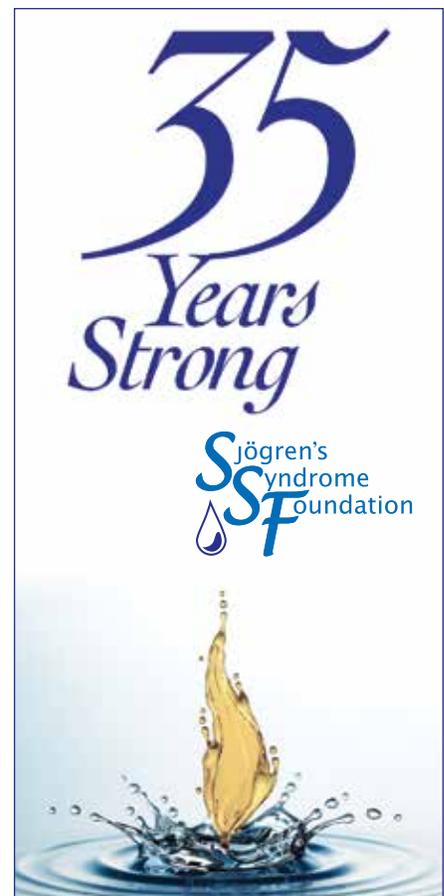
Elaine Chiang

In Honor of Mary E. Hall

Patricia Mermelstein
 Julie Krisanda

In Honor of Rachel Chapman

Maxine Dion



Thank You to Everyone Who Joined Team Sjögren's Goes Turkey!

Sjögren's Syndrome Foundation friends from around the country joined together to raise awareness in their communities by participating in local Turkey Trots wearing a Team Sjögren's Turkey T-shirt!

We hope everyone had a great race or walk, while also raising awareness and funds for Sjögren's! Thank you again to everyone who joined Team Sjögren's Goes Turkey and stepping up for Sjögren's!

Remember to send us pictures of you at your Turkey Trot by emailing them to info@sjogrens.org. ■



Every Santa has His Secret. Shop and support the SSF

Shop for Sjögren's

Shop to benefit the Sjögren's Syndrome Foundation

The Sjögren's Syndrome Foundation has partnered with online retailers who will donate a portion of your purchase to the SSF, so shopping online is now an easy way to contribute to Sjögren's!

Just visit www.sjogrens.org/shopforsjogrens and click through the links provided so that your purchases will benefit the SSF. Once you select the "Sjögren's Syndrome Foundation" as your charity of choice, whenever you return to these retailers and log in, any shopping you do will benefit the SSF. It's that simple!

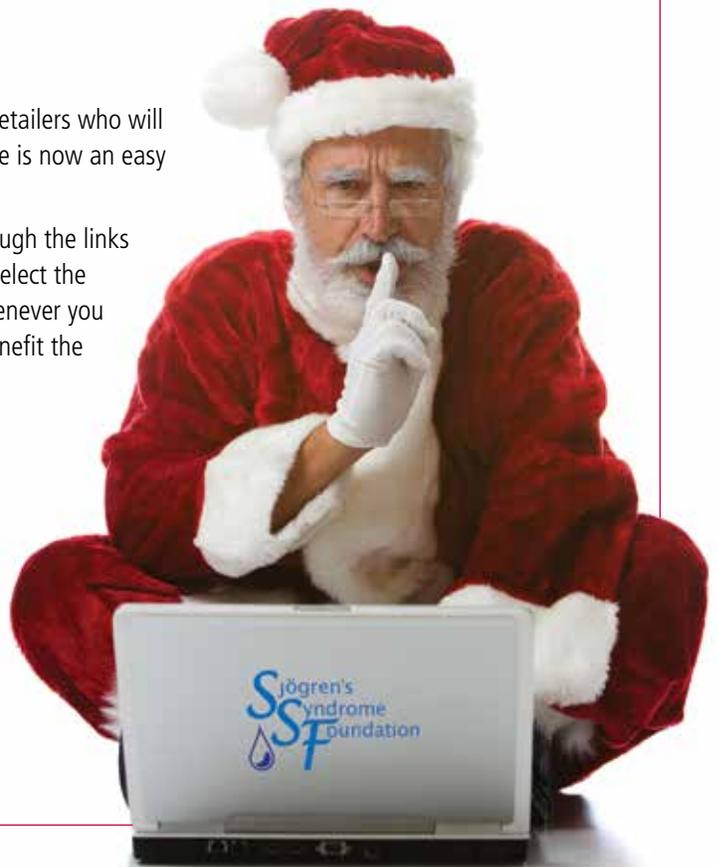
Some of our partners include:



Amazon is one of the most popular online stores in the world, offering a wide variety of products.



iGive.com offers exclusive deals with over 700 brand name stores you know and love, with a specified percentage of each purchase coming back to the SSF.



SAVE THE DATE

2019 National Patient Conference

April 5 – 6, 2019

Hilton Boston / Woburn
2 Forbes Road, Woburn,
Massachusetts

Presentation topics will include:

- Sjögren's Overview
- Memory Problems and Sjögren's: What you can do to help
- Oral and Ocular Manifestations of Sjögren's
- Sjögren's Clinical Trials Update
- What Do the Numbers Mean? Understanding Blood Changes and Lab Results
- Living with Sjögren's: A Patient Panel
- How Sjögren's Can Impact the Central Nervous System
- Nutrition, Wellness and Autoimmune Disease
- And More To Be Announced!

This spring we invite you to join with fellow Sjögren's patients, their families, medical experts, and product exhibitors and attend our 2019 National Patient Conference at the Hilton Boston/Woburn hotel.

Sjögren's is not the same for every person diagnosed, which is why educating yourself on the most up-to-date information and treatment options is so important. Attending the SSF National Patient Conference is one way you can gain information from many different sources while also meeting fellow patients.

We encourage you to take this opportunity to gain an understanding of all the key aspects of Sjögren's. This two-day educational experience will give you the tools to take control of your health and learn how to manage and understand your Sjögren's symptoms and complications.

Watch for your Conference brochure coming in January or visit www.sjogrens.org to see updated conference information.

This year's Conference will include opportunities to:

- Learn from national Sjögren's experts, researchers and SSF staff
- Find new products and receive free samples in our exhibitor hall
- Share with your fellow patients
- Browse Sjögren's resources at the SSF Book Table



The Moisture Seekers
Sjögren's Syndrome Foundation Inc.
10701 Parkridge Blvd., Suite 170
Reston, VA 20191
Phone: 301-530-4420
Fax: 301-530-4415

If you would like to receive this newsletter but are not currently an SSF Member, please contact us! 800-475-6473

Team Sjögren's is headed to the Big Easy!

Travel with Team Sjögren's to New Orleans to walk or run in the Rock 'n' Roll New Orleans Half Marathon and 10K on February 10th!

It is sure to be a good time in the Crescent City as Team Sjögren's joins 20,000 participants on a festive course that makes its way through historic homes, iconic landmarks, joyful musicians and ends with an amazing post-race party in City Park! And one of the best parts – is that the course is flat and fast!

The SSF has limited spots available for our next Team Sjögren's Training Program – so sign up now! When you follow our program we will have you prepared to WALK or RUN either the Half Marathon (13.1 miles) or 10K (6.2 miles) on Sunday, February 10th in New Orleans!

As a Team Sjögren's member, you will not only receive world-class training from our Team Trainer, but also leadership and mentorship from past runners and staff. The staff of the SSF will help guide you through the entire process and ensure you are ready to participate in your chosen event! Our team is always full of walkers and runners – so don't fret if you aren't a runner – Team Sjögren's was designed for you! Our plan takes people from the couch to the course!

In addition, you will be increasing awareness for Sjögren's, as well as, helping raise crucial funds for Sjögren's research and education. Mark your calendars and plan to party with us on February 9-10th in NOLA! If you don't feel you can walk or run in this event, do what so many other patients have done and recruit someone else – your husband, wife, sister, cousin, daughter, son or friend – and have them walk or run in your honor.

To learn more about Team Sjögren's, contact Steven Taylor at 800-475-6473 or staylor@sjogrens.org.



Rock n' Roll
MARATHON SERIES™

Team
Sjögren's

