

## **Questions**

### **Q: What is gene therapy?**

A: Gene therapy involves delivery of healthy copies of genes into the body with the aim of restoring the function of target cells. Jaguar's gene therapy programs use an adeno-associated viral (AAV) vector-based delivery, meaning AAV functions as a type of vehicle (or vector) to deliver functioning genes into the target cells. AAV has been shown to be an effective vector because it is nonpathogenic (meaning it is not capable of causing illness) but very effective at gaining access to the target cells. To be used as a vector for gene delivery, the viral DNA of AAV is removed and replaced with a gene that is intended to have a therapeutic benefit for a patient suffering from a genetic disease. After the AAV vector delivers its genetic payload to the nucleus of a cell, the gene is then transcribed and translated to produce a functional protein. The gene will persist in the nucleus as an episome, separately from the chromosomes. The patient's body then breaks down and processes the AAV vector.

You can view a brief animated video created by Jaguar for younger audiences that explains gene therapy [here](#).

### **Q: Does gene therapy alter a person's DNA?**

A: This depends on the type of gene therapy utilized. We have specifically selected AAV as a vector in part due to its low likelihood for altering the patient's DNA. While AAV vectors primarily deliver a gene to the nucleus which then exists separately from the patient DNA, there have been some cases where AAV-delivered gene inserts into (combines with) patient DNA in human clinical trials. To date, there is no evidence that AAV-delivered gene therapy has led to development of any disease, including cancer.

### **Q: Are there potential risks associated with AAV vectors?**

A: Vector-associated safety risks have been reported in both animals and human clinical studies of investigational AAV gene therapies, as well as in post-marketing experience with approved gene therapies. Sometimes the immune system overreacts to the vector, leading to complications affecting the liver, the brain or your body's ability to form clots. To decrease the likelihood of immune system-linked risks, clinical trials may screen for antibodies to AAV vectors and require medicines to decrease the patient's immune response. This is one of the reasons the clinical trial includes outcomes measures to evaluate and understand the immune response to treatment.

### **Q: How does JAG201 work?**

A: *SHANK3* haploinsufficiency leads to dysfunction at the synapses, or interaction points between neurons, disrupting communication between nerve cells. It causes a reduction of several key neuron receptors and signaling proteins, resulting in impaired synapse formation between neurons. Adequate synapse function is essential for neuron-to-neuron communication, which is the basis for learning and cognitive function. JAG201 delivers a functional *SHANK3* minigene\* via an adeno-associated virus serotype 9 (AAV9) vector to target neurons in the central nervous system. The therapy is designed to deliver proper SHANK3 protein levels and to durably restore the synaptic function required for learning and memory, which underlie appropriate neurodevelopment and maintenance of cognitive, communicative, social and motor skills.

\*A minigene is a shortened form of the gene that retains the key functional components of the genetic sequence. The *SHANK3* minigene was created by removal of unessential parts of the *SHANK3* gene in order to allow the DNA to fit within the AAV vector.

**Q: How is JAG201 administered?**

A: JAG201 will be administered via intracerebroventricular (ICV) injection. The procedure is performed by a neurosurgeon in the operating room under anesthesia and takes approximately 30 minutes. This is followed by observation and discharge within approximately 48 hours.

ICV administration is an injection directly into the brain using a catheter, or tubing, into a space known as the lateral ventricle which contains cerebrospinal fluid (CSF). Humans have one ventricle in each hemisphere of the brain, and JAG201 will be injected into one ventricle. A neurosurgeon, who is experienced at performing this type of surgery, will perform the procedure and will know how to guide the catheter into the right space by looking at pictures taken of the patient's brain using imaging such as MRI or CT before the procedure. This method was selected to allow delivery of JAG201 directly to the target cells in the brain and central nervous system and is supported by the preclinical studies conducted with JAG201 to evaluate its benefit and safety profile in animals. You can view Jaguar's published preclinical data on the biodistribution and tolerability of JAG201 in non-human primates following ICV injection [here](#).

Outside of gene therapy, ICV administration is utilized for short-term and long-term delivery of approved medicines directly to the brain and CNS. According to published research, more than 20,000 procedures are done annually in the U.S.<sup>i</sup>

**Q: How do you get the AAV to go to the desired location (i.e., to the cells lacking in SHANK3)? Does it go to the entire brain?**

A: JAG201 will be administered via intracerebroventricular (ICV) injection. The procedure is performed by a neurosurgeon in the operating room under anesthesia and takes approximately 30 minutes. This is followed by observation and discharge within approximately 48 hours.

ICV administration is an injection directly into the brain using a catheter, or tubing, into a space known as the lateral ventricle which contains cerebrospinal fluid (CSF). Humans have one ventricle in each hemisphere of the brain, and JAG201 will be injected into one ventricle with the goal of delivering JAG201 broadly to the regions of the brain that will be necessary to demonstrate efficacy and ultimately change behavior in PMS patients. This method was selected to allow delivery of JAG201 directly to the target cells in the brain and central nervous system and is supported by the preclinical studies conducted with JAG201 to evaluate its benefit and safety profile in animals. Additionally, JAG201 expression is controlled by a neuron-specific promoter to ensure the *SHANK3* minigene is only expressed in neuronal cells.

Outside of gene therapy, ICV administration is utilized for short-term and long-term delivery of approved medicines directly to the brain and CNS. According to published research, more than 20,000 procedures are done annually in the U.S.<sup>ii</sup>

**Q: Has intracerebroventricular (ICV) administration of AAV been done in humans before? What is known about how those patients fare in the long term?**

A: Yes. There are multiple investigational AAV-based gene therapy treatments currently in clinical testing that are administered via a one-time ICV injection. These studies are ongoing and long-term data and outcomes in these individuals are pending.



Outside of gene therapy, ICV administration is utilized for short-term and long-term delivery of approved medicines directly to the brain and CNS. According to published research, more than 20,000 procedures are done annually in the U.S.<sup>iii</sup>

To learn more about gene therapy routes of administration, including ICV, please visit ASGCT's [Lunch & Learn](#) on the topic.

**Q: Will immune system suppression be required for the administration of JAG201?**

A: Short-term immune suppression will be required and is standard for AAV-based investigational gene therapy treatments to prevent immune reaction to delivery of the gene therapy.

**Q: What studies have been done to date with JAG201?**

A: Preclinical (animal models) studies are an important and required way new potential treatments are tested before human clinical trials. Promising preclinical data in rodent and non-human primate models of *SHANK3* insufficiency have been generated.

**Q: Has Jaguar presented any preclinical data for JAG201?**

A: Yes. In May 2024 at the Annual Meeting of the American Society of Gene & Cell Therapy (ASGCT), Jaguar presented the first preclinical efficacy data for JAG201 following a single intracerebroventricular (ICV) injection in mice. The proof-of-concept (POC) data show that in a mouse model of *SHANK3* deficiency, which mimics many of the features of humans with loss of one functional *SHANK3* gene, JAG201 treatment resulted in significant improvements in neurobehavioral outcomes involving measures of restorative sleep, motor and explorative behavioral deficits, and motor-coordination deficits vs. untreated control animals lacking both copies of *SHANK3*. Additionally, JAG201 treatment resulted in widespread and persistent delivery of *SHANK3* throughout the brains of treated animals, suggesting that these neurobehavioral improvements can be sustained over time following a single ICV treatment with JAG201. You can view the data here on Jaguar's [website](#) under the *SHANK3* section.

**Q: Can you share the results you saw in non-human primate and mouse studies?**

A: To date, we have presented two sets of preclinical data. You can see the published information here on our [website](#) under the *SHANK3* section. These data were used to support our IND application. We are continuing to work to publish additional data from our preclinical studies.

**Q: What exactly is JAG201 designed to correct or improve in an individual with PMS?**

A: JAG201 is intended to treat the root cause of the disease and improve cognitive, functional and behavioral abnormalities observed in PMS. The therapy is designed to deliver proper *SHANK3* protein levels and to durably restore the synaptic function required for learning and memory, which underlie appropriate neurodevelopment and maintenance of cognitive, communicative, social, and motor skills. Results from the initial clinical study will help inform further study development.

**Q: How can you control for over-expression of *SHANK3*?**

A: The *SHANK3* minigene is under the regulation of the human synapsin 1 promoter, which limits expression to neuronal cells.



**Q: Does JAG201 have the potential to be a cure for PMS?**

A: Our goal with JAG201 is to treat the root cause of PMS. Gene therapy could offer the opportunity to have a lasting impact on the disease including, potentially the associated behavioral, developmental, and cognitive abnormalities observed in individuals with disorders resulting from *SHANK3* mutations or deletions. Results from the initial clinical study will help inform further development of JAG201.

**Q: Will the effect of JAG201 be durable over time? Do brain cells/neurons die?**

A: Given the low potential for cellular division in the brain, we expect that a one-time JAG201 ICV gene delivery will have lasting, long-term durability in neurons. Neurons are generally non-dividing, compared to another target tissue such as the liver, which has a higher rate of cell turnover.

**Q: Do you anticipate the lower dose in the initial clinical trial to be effective?**

A: We have selected an initial dose for the first human clinical trial that we believe will be both safe and effective based on preclinical studies in animals. We are also evaluating an additional escalated dose to ensure we identify the safest and most effective dose coming out of the trial.

**Q: Why will dosing be done one at a time?**

A: JAG201 will be evaluated in humans for the first time ever in this initial clinical study. While we propose to test a dose that was well tolerated in animals, we plan to dose one patient at a time to allow for thorough safety evaluations of individual patients. If the gene therapy is determined to be well tolerated in the first patient, then the next patient can proceed with dosing. This approach is not unusual and is generally done for at least the first few patients that receive a particular dose in a gene therapy clinical trial. It allows a Sponsor (in this case, Jaguar) and the United States Food and Drug Administration (FDA) to make necessary adjustments to the clinical trial and dosing of subsequent patients if a safety concern arises.

**Q: Will every pediatric trial participant receive the same exact dose? Is it age or weight dependent?**

A: We have selected two doses for two cohorts to use in the initial clinical trial that we believe will be both safe and effective based on preclinical studies in animals. Families will be informed of the exact dosage a participant may receive during the screening process.

**Q: Is it possible for a trial participant to be re-dosed?**

A: JAG201 is being investigated as a single ICV-administration treatment.

**Q: How do I enroll my child in the initial clinical trial?**

A: Study enrollment is now open at three trial sites: Seaver Autism Center at Mount Sinai, Rush University and Boston Children's Hospital.

Enrollment activities are managed through the trial sites, which can be contacted using the following information.

- United States, New York  
Seaver Autism Center at Mount Sinai  
New York, New York, United States, 10029  
Contact: Serena Cai  
Phone: 212-241-6231

**Jaguar Gene Therapy**  
Two Conway Park  
150 N. Field Drive, Suite 300  
Lake Forest, IL 60045  
[www.jaguargenetherapy.com](http://www.jaguargenetherapy.com)



Email: [serena.cai@mssm.edu](mailto:serena.cai@mssm.edu)  
Principal Investigator: Alex Kolevzon, MD

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- United States, Massachusetts  
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Contact: Anna Cronin  
Phone: 617-919-3499  
Email: [anna.cronin@childrens.harvard.edu](mailto:anna.cronin@childrens.harvard.edu)  
Principal Investigator: Siddharth Srivastava, MD

Please visit [clinicaltrials.gov](https://clinicaltrials.gov) for the most current information related to clinical trial sites.

We encourage families with children with PMS aged 12 to 36 months who have interest in the JAG201 clinical trial to explore enrolling in a Phelan-McDermid syndrome natural history study. Seaver Autism Center for Research and Treatment at the Icahn School of Medicine at Mount Sinai in New York City and Rush University in Chicago are actively enrolling patients aged 12 to 36 months.

For information on participating in a natural history study, please reach out directly to the following contacts:

- Seaver Autism Center at Mount Sinai  
New York, New York, United States, 10029  
Contact: Serena Cai  
Email: [serena.cai@mssm.edu](mailto:serena.cai@mssm.edu)  
Currently enrolling ages 12-36 months
- Rush University  
Chicago, Illinois, United States, 60612  
Contact: Madison Nava  
Email: [Madison\\_T\\_Nava@rush.edu](mailto:Madison_T_Nava@rush.edu)  
Currently enrolling ages 12-36 months

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Note that travel stipends may be available for participants in PMS natural history studies at Mount Sinai and RUSH University including the Developmental Synaptopathies Consortium (DSC) natural history study. Please inquire with the Phelan-McDermid Syndrome Foundation.

**Q: Why do you encourage participation in PMS natural history studies? What is the value?**

A: Natural history studies have historically been used by clinical researchers to understand disease progression. More recently, these studies have been utilized to support clinical development in rare diseases. For example, natural history data have served as external comparators to support rare disease treatment approvals when it is unethical or unfeasible to evaluate the treatment with a randomized control trial design.

The more individuals with PMS who participate in natural history studies, the stronger the natural history data for the disease. A strong, robust set of natural history data better supports potential treatment approvals for PMS. In other words, participating in PMS natural history studies is an effective way to improve the odds of success for PMS treatments to be developed and approved.

As Jaguar expands its clinical program, we will first consider individuals that have participated in one of the ongoing PMS natural history trials as their natural history dataset will provide an important pre-treatment comparator.

**Q: What is the screening process for trial enrollment?**

A: Following the patient's legally authorized representative (LAR) providing informed consent, patients will undergo screening to determine eligibility for the study. Screening will begin with determination of key eligibility criteria, including genetic status and medical history in addition to a number of baseline assessments. Patients will be evaluated by the study team to determine whether they meet all eligibility criteria and can receive JAG201.

**Q: How many participants will you enroll in this first trial? Why?**

A: The first clinical trial for JAG201 is designed to evaluate the safety, tolerability and dose of the JAG201 treatment. As a safety study and dosing trial designed to inform the future development of JAG201, we are aiming to enroll a small number of participants (target of six) with the first participant expected to enroll in the first quarter of 2025. Depending on the outcomes and learnings from this first trial, we would aim to expand the trial to enroll additional patients as early as 2027.

As this is a first-in-human clinical trial, we will monitor safety outcomes in each trial participant closely and anticipate that there may be communications with the FDA after dosing participants. These ongoing discussions with the FDA could inform or determine potential changes to study design including enrollment criteria as the trial progresses.

**Q: With such a small number of participants in the trial, how will eligible participants be prioritized?**

A: Generally speaking, the first cohort of participants will be prioritized by age with the youngest eligible participants given preference. We are prioritizing age because we believe treating individuals that are still actively undergoing development may provide greater potential for evaluating the benefit of JAG201. Additionally, preference will be given to individuals who have participated in the Developmental Synaptopathies Consortium (DSC) PMS natural history study or are eligible to participate in an ongoing natural history study. Mount Sinai and Rush are currently accepting participants for natural history in the age range of 12-36 months.



**Q: Will Jaguar be reaching out directly to specific families about participating in the initial clinical trial?**

A: No. Enrollment for the initial clinical trial will be managed through the trial sites.

**Q: Will the first clinical trial be limited to the U.S.? Can participants living outside the U.S. participate in the trial?**

A: The first clinical trial will be limited to sites within the U.S. Participants and caregivers will be expected to attend regular visits in person throughout the five-year duration of the trial. For this reason, clinical trial participants must be permanent legal residents of the U.S., residing full-time in the U.S. Once safety and efficacy are established in the U.S. clinical trials, we plan to expand outside the U.S.

**Q: Where are the clinical trial sites?**

A: The Seaver Autism Center at Mount Sinai in New York, Rush University in Chicago, and Boston Children's Hospital in Boston are participating in this study. Up-to-date study details on ClinicalTrials.gov are posted here: [Study Details | JAG201 Gene Therapy Study in Children & Adults with SHANK3 Haploinsufficiency | ClinicalTrials.gov](#).

We encourage families with children with PMS aged 12 to 36 months who have interest in the JAG201 clinical trial to explore enrolling in a Phelan-McDermid syndrome natural history study. Seaver Autism Center for Research and Treatment at the Icahn School of Medicine at Mount Sinai in New York City and Rush University in Chicago are actively enrolling patients aged 12 to 36 months.

PMS Natural History Study-specific questions may be directed to:

- Seaver Autism Center at Mount Sinai  
New York, New York, United States, 10029  
Contact: Serena Cai  
Email: [serena.cai@mssm.edu](mailto:serena.cai@mssm.edu) Currently enrolling ages 12-36 months
- Rush University  
Chicago, Illinois, United States, 60612  
Contact: Madison Nava  
Email: [Madison\\_T\\_Nava@rush.edu](mailto:Madison_T_Nava@rush.edu)  
Currently enrolling ages 12-36 months

Note that travel stipends may be available for participants in PMS natural history studies at Mount Sinai and RUSH University including the Developmental Synaptopathies Consortium (DSC) natural history study. Please inquire with the Phelan-McDermid Syndrome Foundation.

**Q: What are the inclusion and exclusion criteria for the trial?**

A: Up-to-date study details, including inclusion and exclusion criteria, are available on ClinicalTrials.gov here: [Study Details | JAG201 Gene Therapy Study in Children & Adults with SHANK3 Haploinsufficiency | ClinicalTrials.gov](#). Our first clinical trial for JAG201 will be a small study and includes very specific inclusion and exclusion criteria to meet the guidance set forth by the FDA for Phase 1 clinical trials and to ensure we can appropriately evaluate the safety, tolerance and dose of JAG201.

Generally speaking, the first cohort of participants will be prioritized by age with the youngest eligible participants given preference. We are prioritizing age because we believe treating individuals that are still actively undergoing development may provide greater potential for evaluating the benefit of JAG201.

Throughout the clinical phase of the JAG201 program, our goal remains to demonstrate safety, tolerability, dose and efficacy so the therapy can be considered for approval by the FDA and potentially made available to all individuals with *SHANK3* haploinsufficiency. We are dedicated to doing this as rapidly and as safely as possible.

**Q: How is a class 1 deletion defined?**

Class 1 deletions include only *SHANK3* or *SHANK3* in combination with *ARSA* and/or *ACR* and *RABL2B*.

**Q: If my child has a specific medical condition or device (e.g., seizures, ventricular shunt), will it prohibit him/her from participating in the initial clinical trial?**

A: Up-to-date study details, including key inclusion and exclusion criteria, are available on ClinicalTrials.gov here: [Study Details | JAG201 Gene Therapy Study in Children & Adults with SHANK3 Haploinsufficiency | ClinicalTrials.gov](#). Our first clinical trial for JAG201 will be a small study and includes very specific inclusion and exclusion criteria to meet the guidance set forth by the FDA for Phase 1 clinical trials and to ensure we can appropriately evaluate the safety, tolerance and dose of JAG201.

**Q: Does an immune response to AAV9 prohibit an individual from participating in the initial clinical trial?**

A: Up-to-date study details, including key inclusion and exclusion criteria, are available on ClinicalTrials.gov here: [Study Details | JAG201 Gene Therapy Study in Children & Adults with SHANK3 Haploinsufficiency | ClinicalTrials.gov](#). AAV9 immunity is not an exclusion criterion for participation in the clinical study.

**Q: You have said you will be including pediatric individuals with small deletions and loss-of-function mutations in the initial clinical trial. Can you be more specific about the size of deletions and the kinds of mutations?**

A: Up-to-date study details, including inclusion and exclusion criteria, are available on ClinicalTrials.gov here: [Study Details | JAG201 Gene Therapy Study in Children & Adults with SHANK3 Haploinsufficiency | ClinicalTrials.gov](#). The JAG201 clinical trial will enroll patients with a molecular confirmation of a loss of function mutation in *SHANK3* or a class I deletion in 22q13.3 which is characterized by deletion of *SHANK3* or *SHANK3* in combination with *ARSA* and/or *ACR* and *RABL2B*.

**Q: Will JAG201 help those with larger deletions or other mutations not included in the initial clinical trial? What about a ring chromosome?**

A: We believe JAG201 has the potential for benefit in all patients with *SHANK3* haploinsufficiency. Results from the initial clinical study will help inform further development of JAG201.

**Q: Will trial participants need to stop their ongoing medications during the trial?**

A: In general, participants will be allowed to continue maintenance medications as long as they are on a stable dose for the three months leading into the trial.



**Q: Will trial participants need to change (i.e., discontinue, decrease or increase) their ongoing therapy services (e.g., ABA, speech, occupational, etc.) during the trial?**

A: No. Participants will be allowed to continue in ongoing therapy services. The level of intervention must remain stable for at least three months prior to the start of the trial.

**Q: How often will trial participants need to travel to the trial site?**

A: Participants and caregivers will be expected to attend regular visits in person throughout the five-year duration of the trial. Visits will be more frequent earlier in the trial and less frequent after the first year.

**Q: Are travel expenses for clinical trial participation reimbursed?**

A: Yes. A travel expense program is offered to all participants for reimbursement.

**Q: Will you be studying JAG201 in both adult and pediatric patients?**

A: Our goal is for JAG201 to be studied in both adult and pediatric patients.

**Q: Why have you updated your study to start with pediatric patients instead of adults?**

A: Our preclinical data suggest the administration of the gene therapy early in life provides a clear potential for benefits to be realized. Key opinion leaders think intervening earlier in a patient's course of illness to address the underlying deficits caused by the *SHANK3* deficiency while individuals are still actively undergoing development will provide a greater potential for benefit. Our hope is that potential early success in the pediatric population may open the door to evaluating JAG201 in broader patient populations.

**Q: Does this mean you don't believe treatment with JAG201 will have a benefit in adults?**

A: We believe JAG201 has the potential for benefit in both pediatric and adult patients. Results from the initial clinical study will help inform further development of JAG201.

**Q: When will you begin dosing adults in the clinical trial?**

A: We don't know exactly when adults could be dosed as part of the clinical trial. Timing will depend on when pediatric patients are dosed and data from those trial participants can be evaluated. Based on outcomes and learnings from these first patients, dosing in adults could occur as early as 2027.

**Q: If someone participates in a clinical trial for JAG201, will they be excluded from future clinical trials?**

A: Unfortunately, we do not know the answer to this. It would depend on the goals of future clinical trials and the associated investigational therapies as well as applicable regulatory guidance. We can tell you that AAV9 exposure may lead to development of immune system recognition of the AAV vector that could make future treatment with AAV9 unsafe or ineffective.

**Q: If my child participates in another clinical trial, for example the Neuren trial, can he/she participate in the JAG201 clinical trial?**

A: Generally speaking, sponsors exclude participants who have received or are receiving potentially disease-modifying investigational therapies from clinical trials evaluating new potential treatments. Doing so reduces the possibility of confounding factors when an investigational medicine is being evaluated by regulatory authorities. In other words, excluding exposure to other investigational treatments gives regulatory authorities the confidence that any benefit (or adverse effect) is being caused by the therapy being evaluated and not another medicine. To that end, those who have



received or are receiving potentially disease-modifying treatments (including Neuren's NNZ-2591) will not be able to participate in JAG201 clinical trials. This approach gives investigational treatments the opportunity to be thoroughly and appropriately reviewed by regulatory authorities.

If JAG201 is approved, its use in conjunction with any other treatment or potential medicines may be possible, and data collected during the clinical trial phase of JAG201 will help inform that possibility.

**Q: If my child is not selected for enrollment in the initial clinical trial, does that also mean they cannot participate in any potential future trials for JAG201?**

A: We do not know the specific inclusion/exclusion criteria for any potential future clinical trials of JAG201, however, not meeting criteria in the initial trial does not immediately exclude someone from participating in any potential future trials.

**Q: If my child is not selected for enrollment in the initial clinical trial, can I gain access to JAG201 by some other means (e.g., purchase out of pocket)? What if I assume all liability?**

A: JAG201 is an investigational gene therapy. At this time, JAG201 is only accessible through clinical trial participation.

**Q: Have any patients been dosed in the JAG201 initial clinical trial?**

A: Yes, two pediatric patients have been dosed in the JAG201 initial clinical trial. As of the date this FAQ was released (August 8, 2025), no treatment-related adverse safety events have been observed. It is too early to determine signs of efficacy.

**Q: Have any safety concerns been observed in any patients dosed with JAG201?**

A: As of the date this FAQ was released (August 8, 2025), no treatment-related safety concerns have emerged.

**Q: Does the treatment appear to be working in any patients dosed with JAG201?**

A: As of the date this FAQ was released (August 8, 2025), it is too early to determine signs of efficacy.

**Q: Where have patients been dosed with JAG201?**

A: The first patient was dosed with JAG201 at the Seaver Autism Center at Mt. Sinai in New York. The second patient was dosed with JAG201 at Rush University Medical Center in Chicago, Illinois.

**Q: When will subsequent trial participants be dosed with JAG201?**

A: The clinical trial plan calls for dosing patients one at a time to allow for thorough safety evaluations of individual patients. If the gene therapy is determined to be well tolerated in the patient ahead, then the next patient can proceed with dosing. This approach is not unusual and is generally done for at least the first few patients that receive a particular dose in a gene therapy clinical trial. It allows a Sponsor (in this case, Jaguar) and the United States Food and Drug Administration (FDA) to make necessary adjustments to the clinical trial and dosing of subsequent patients if a safety concern arises.

**Q: When will JAG201 be approved in the United States?**

A: JAG201 is an investigational gene therapy. We cannot speculate as to if or when JAG201 may be approved by the FDA. To learn more about the drug development process in the United States, you can visit

<https://www.fda.gov/patients/learn-about-drug-and-device-approvals/drug-development-process>.

**Q: What is a Phase 1 clinical trial?**

A: In a Phase I clinical trial, a treatment is tested in a small group of people for the first time. The purpose is to study the treatment to learn about safety, tolerability and dose. To learn more about clinical trials, you can visit <https://www.fda.gov/patients/drug-development-process/step-3-clinical-research>.

**Q: Do you have any clinical trial applications for JAG201 with MHRA, EMA or other regulatory bodies outside the U.S.?**

A: Having received IND clearance from the FDA, we are currently in the process of enrolling our first clinical trial in the U.S. No additional expansion is being planned at this time as we prioritize our regulatory pathway in the U.S.

Our aim remains to make JAG201 available to all those with PMS throughout the world, and one way to accomplish this would be to use U.S. registrational data, after a potential U.S. approval, and re-package it for regulatory authorities outside the U.S. to evaluate for approval. This has been successfully accomplished with other approved treatments in various diseases.

**Q: Can you recommend a site/company/physician/lab for my loved one to be tested for a *SHANK3* gene mutation or deletion?**

A: We are not in a position to recommend care or testing for your loved one. We encourage you to speak with your loved one's physician to discuss potential genetic testing options.

**Q: What genetic test does my loved one need to determine if he/she has *SHANK3* mutation or deletion?**

A: Examples of genetic tests that can diagnose both mutations and deletions include Whole Exome Sequencing, Chromosomal Microarray and genetic panels that sequence the *SHANK3* gene.

**Q: What is Rare Pediatric Disease designation, and why is it important?**

A: The FDA grants Rare Pediatric Disease designation for serious and life-threatening rare pediatric diseases. Under this program, companies are eligible to receive a priority review voucher for a subsequent marketing application for a different product following approval of a product with rare pediatric disease designation. The priority review voucher may be used by the sponsor or sold or transferred. This program is meant to stimulate drug development for rare pediatric diseases.

**Q: What is Fast Track designation, and why is it important?**

A: The Fast Track program is a process designed to facilitate the development and expedite the review of drugs to treat serious conditions and fill an unmet medical need. The purpose is to get important new drugs to patients earlier. Fast Track addresses a broad range of serious conditions. A therapy that receives Fast Track designation is eligible for more frequent meetings with FDA to discuss the drug's development plan and ensure collection of appropriate data needed to support drug approval, among other benefits.

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<sup>1</sup> Sekula RF, Cohen DB, Patek PM, Jannetta PJ, Oh MY. Epidemiology of ventriculostomy in the United States from 1997 to 2001. *Br J Neurosurg*. 2008 Apr;22(2):213-8. doi: 10.1080/02688690701832084. PMID: 18348016.

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<sup>ii</sup> Sekula RF, Cohen DB, Patek PM, Jannetta PJ, Oh MY. Epidemiology of ventriculostomy in the United States from 1997 to 2001. Br J Neurosurg. 2008 Apr;22(2):213-8. doi: 10.1080/02688690701832084. PMID: 18348016.

<sup>iii</sup> Sekula RF, Cohen DB, Patek PM, Jannetta PJ, Oh MY. Epidemiology of ventriculostomy in the United States from 1997 to 2001. Br J Neurosurg. 2008 Apr;22(2):213-8. doi: 10.1080/02688690701832084. PMID: 18348016.