Title of Research Study: Neuromodulation and Cognitive Training in Substance Use Disorders

Investigator Team Contact Information:
For questions about research appointments, the research study, research results, or other concerns, call the study team at:

Investigator Name: Kelvin O. Lim, M.D **Investigator Departmental Affiliation:** Department of Psychiatry **Phone Number:** 612-624-0134 **Email Address:** kolim@umn.edu	**Study Staff:** Melanie Stimac **Phone Number:** 612-301-2449 **Email Address:** Inpibrainstudy@umn.edu

If your doctor is also the person responsible for this research study, please note that s/he is interested in both your clinical care and the conduct of this research study. You have the right to discuss this study with another person who is not part of the research team before deciding whether to participate in the research.

Supported By: This research is supported by the University of Minnesota Foundation.

Key Information About This Research Study

The following is a short summary to help you decide whether or not to be a part of this research study. More detailed information is listed later on in this form.

What is the research?

Doctors and investigators are committed to your care and safety. There are important differences between research and treatment plans:

- The goal of research is to learn new things in order to help groups of people in the future. Investigators learn things by following the same plan with a number of participants, so they do not usually make changes to the plan for individual research participants. You, as an individual, may or may not be helped by volunteering for a research study.

- The goal of clinical care is to help you get better or to improve your quality of life. Doctors can make changes to your clinical care plan as needed.

Research and clinical care are often combined. One purpose of this informed consent document is to provide you clear information about the specific research activities of this study.

Why am I being asked to take part in this research study?

We are asking you to take part in this research study because you have a current stimulant use disorder (SUD) OR alcohol use disorder (AUD) diagnosis, are between 18-65 years old, abstinent from substance use for at least 3 weeks, and currently in a NuWay treatment program.

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Why is this research being done?

This study is being done to learn how transcranial direct current stimulation (tDCS) can help current treatments become more effective in supporting long-term abstinence in stimulant and alcohol use disorders. The information gained from this study will help us to understand how the brain works and how tDCS could be used to improve brain function.

Additionally, we are interested in examining whether specific genetic differences are related to treatment outcome. For this we would collect a saliva sample from you. Providing a genetic sample (saliva) is optional and takes about 5 minutes.

How long will the research last?

We expect that you will be in this research study for about 7 months. You will be asked to participate in 10 study visits, a post-intervention interview, and 4 follow-up visits (which will be scheduled for 1, 2, 3 and 4 months after the 10 study visits are completed). The study team may also try to reach you for up to 6 months after the study period, to complete the 4 follow-up visits. Transcranial direct current stimulation will be used in 10 of the study visits.

What will I need to do to participate?

You will be asked to complete questionnaires, provide samples of urine or saliva for a drug screen, you will also be given the option to provide a one-time saliva test for genetic analysis which can be collected anytime during the study, undergo tDCS or sham tDCS, and attend 4 follow-up visits.

tDCS is an experimental technique used to stimulate the brain. The stimulation occurs outside the head. The procedure involves applying a small amount of electrical current across the scalp for a short period of time. This small current is able to change the electrical activity inside the targeted areas of the brain. The tDCS device consists of two saline soaked sponges beneath small electrodes. The sponges will be placed on your scalp (with a headband).

Half of the participants in this study will receive active stimulation during the training session. The other half of participants will receive sham stimulation, which will feel like active stimulation, but won't deliver meaningful electrical current during the whole training session.

*More detailed information about the study procedures can be found under **"What happens if I say yes, I want to be in this research?"***

Is there any way that being in this study could be bad for me?

There is a slight risk you may feel uncomfortable or upset answering some sensitive questions asked in the questionnaires or forms. These questions are important for the study, but you can also skip any questions you feel uncomfortable or upset answering. Please make sure that you tell the study staff if you feel uncomfortable or upset while answering questions or completing tasks. You can choose to stop participating at any time.

tDCS involves applying a weak electrical current to the scalp with a device. This device has been labeled as a non-significant risk device by the FDA for investigational purposes. During the stimulation, you may feel some itching underneath electrodes, and you may have a headache, fatigue, or nausea. These typically resolve when the stimulation stops.

Seizures are not a risk of tDCS, but if you have a history of seizures you should not take part in this study. Tell the study staff if you think this applies to you.

*More detailed information about the risks of this study can be found under **"What are the risks of this study? Is there any way being in this study could be bad for me? (Detailed Risks)"***

Will being in this study help me in any way?

There are no benefits to you from your taking part in this research. We cannot promise any benefits to others from your taking part in this research.

What happens if I do not want to be in this research?

You do not have to participate in this research. Your decision to not participate will not affect any of your current treatment program and will have no impact on any medical care.

Detailed Information About This Research Study

The following is more detailed information about this study in addition to the information listed above.

How many people will be studied?

We expect about 80 people will be in this research study.

What happens if I say "*Yes, I want to be in this research*"?

Baseline Interview:
This visit will last about 1.5 hours total.

- You will complete cognitive and clinical assessments.
- You will complete questionnaires.
- The study team will ask you about your health history and clinical symptoms and review your medical and clinical history.
- You will be randomly assigned to either active tDCS or sham tDCS. The experimental treatment you get will be chosen by chance, like flipping a coin. Neither you nor the study doctor will choose what experimental treatment you get. You will have an equal chance of being given either experimental or sham treatment.
- You may be audio and video recorded during these sessions.

Brain Training Days (Sessions 2-11) tDCS:
These visits will last about 1 hour each.

- Daily Cognitive Training and tDCS interventions.
- You may be audio and video recorded during these sessions.

Post-Intervention Interview
This visit will last about 1.5 hours total.

- This visit will be almost identical to the baseline interview visit.
- You will complete cognitive assessments.
- You will complete questionnaires.

Follow-up Visits 1 and 2
These visits will last about 1.5 hours each and will be scheduled 1 and 2 months after the post-intervention interview.

- You will complete cognitive and clinical assessments.
- You will complete questionnaires.
- You will provide a saliva or urine sample for a drug screen test.

Follow-up Visits 3 and 4
These visits will last about 30 minutes each and will be scheduled 3 and 4 months after the post-intervention interview.

- You will complete questionnaires.

At any time during the study visits, you may choose to provide a one time genetic sample (saliva). Before collecting the saliva sample, we will ask you to not eat, drink, smoke, or chew gum for 30 minutes. Then you will spit into a plastic container a few times to fill the container to a designated line. About 2 milliliters, or half a teaspoon, of saliva will be collected. Saliva collection is optional; you can still take part in the rest of the study if you choose not to give a saliva sample.

What are my responsibilities if I take part in this research?

If you take part in this research, you will be responsible for attending all study visits and following instructions given to you by study staff.

What happens if I say "Yes", but I change my mind later?

You can leave the research study at any time. You can leave the research study at any time and no one will be upset by your decision.

Choosing not to be in this study or to stop being in this study will not result in any penalty to you or loss of benefit to which you are entitled. This means that your choice not to be in this study will not negatively affect your right to any present or future medical care.

If you stop being in the research, information about you that has already been collected may not be removed from the study database.

What are the risks of being in this study? Is there any way being in this study could be bad for me? (Detailed Risks)

Confidentiality: During the study, you will be asked for personal information. This information will be stored securely to protect your privacy, but there is a risk that it could be accidentally shared with people who do not have access to this information.

Optional saliva collection: The collection of saliva for genetic material is painless with little risk to your health. If you choose to provide a saliva sample, you will not be allowed to eat, drink, smoke, or chew gum at least 30 minutes prior to the saliva collection. Some people may experience dry mouth after saliva collection. Water may be provided to you by the study staff member if you experience dry mouth after the saliva sample collection.

Genetic Data Collection: Additionally, a risk of genetic research is loss of confidentiality. If your results were to get out, there is a risk that it could cause emotional distress for you and your family, or lead to discrimination against you by insurance companies or employers. To protect against these risks, we will not put any information from this study in your medical record. Any physical copies of your genetic results will be stored in a locked file cabinet within a secured office. Any electronic genetic results will be encrypted and stored on a password-protected computer according to current University of Minnesota policy for protection of confidentiality. Your donated saliva sample and genetic material will not be stored with your name or any other identifying information, but instead will be given a code number to protect your identity.

A federal law, called the Genetic Information Nondiscrimination Act (GINA), generally makes it illegal for health insurance companies, group health plans, and most employers to discriminate against you based on your genetic information. This law generally will protect you in the following ways:

- Health insurance companies and group health plans may not request your genetic information that we get from this research.

- Health insurance companies and group health plans may not use your genetic information when making decisions regarding your eligibility or premiums.

- Employers with 15 or more employees may not use your genetic information that we get from this research when making a decision to hire, promote, or fire you or when setting the terms of your employment.

Be aware that this federal law does not protect you against genetic discrimination by companies that sell life insurance, disability insurance, or long-term care insurance.

Will it cost me anything to participate in this research study?

Taking part in this research study will not lead to any costs to you.

What happens to the information collected for the research, including my health information?

We try to limit the use and sharing of your information, including research study records, and any other information about you, to people who have a need for this information. However, we cannot promise complete confidentiality.

Overview

If you participate in this study, your information, including your health information, will be used and shared for purposes of conducting this research to the entities described under "Who will access and use my health information." As described later in this Consent Form, your information may also be used and shared for publishing and presenting the research results, future research, and any optional elements of the research you agree to in this Consent Form, which may include creating audio and video recordings of you. Audio and video recording will not be shared outside of the study. If you sign this Consent Form, you are giving us permission to use and share your health information for these purposes, and if we are using your medical records, you are giving permission to any health care providers who are treating you to share your medical records with us.

What health information will be made available?

Health information about you to be used and shared for the research includes those items checked by the research team below:

☐ Your medical records, which may include records from hospital and clinic visits, emergency room visits, immunizations, medical history and physical exams, medications, images and imaging reports, progress notes, psychological tests, EEG/EKG/ECHO reports, lab and pathology reports, dental records and/or financial records. These records may be used and shared for as long as this research continues.

☒ Information collected as part of this research study, including research procedures, research visits, and any optional elements of the research you agree to, all as described in this Consent Form. This information might not be part of your medical record, and may include things like responses to surveys and questionnaires, and information collected during research visits described in this Consent Form.

What about more sensitive health information?

Some health information is so sensitive that it requires your specific permission. If this research study requires any of this sensitive information, the boxes below will be marked and you will be asked to initial to permit this information to be made available to the research team to use and share as described in this Consent Form.

☐ My drug & alcohol abuse, diagnosis & treatment records _____ (initial)

☐ My HIV/AIDS testing records _____ (initial)

☐ My genetic testing records _____ (initial)

☐ My mental health diagnosis/treatment records ____ (initial)

☐ My sickle cell anemia records _____ (initial)

Who will access and use my health information?

If you agree to participate in this study, your information will be shared with:

- The University of Minnesota research team and any institutions or individuals collaborating on the research with us;
- Others at the University of Minnesota who provide support for the research or who oversee research (such as the Institutional Review Board or IRB which is the committee that provides ethical and regulatory oversight of research at the University, systems administrators and other technical and/or administrative support personnel, compliance audit professionals (Such as the Quality Assurance Program of the Human Research Protection Program (HRPP)), individuals involved in processing any compensation you may receive for your participation, and others);
- The research sponsor(s), any affiliates, partners or agents of the sponsor(s) involved in the research, organizations funding the research, and any affiliates, partners or agents of the funding organization(s) involved in the research;
- Organizations who provide accreditation and oversight for research and the research team, and others authorized by law to review the quality and safety of the research (such as U.S. government agencies like the Food and Drug Administration, the Office of Human Research Protections, the Office of Research Integrity, or government agencies in other countries); and
- Organizations that process any payments that may be made to you for participating in this study, and any other individuals or organizations specifically identified in this Consent Form.

Additional Sharing of your information for mandatory reporting:

If we learn about any of the following, we may be required or permitted by law or policy to report this information to authorities:

- Current or ongoing child or vulnerable adult abuse or neglect;
- Communicable, infectious or other diseases required to be reported under Minnesota's Reportable Disease Rule;
- Certain wounds or conditions required to be reported under other state or federal law; or
- Excessive use of alcohol or use of controlled substances for non-medical reasons during pregnancy.

How will my information be used in publications and presentations?

We may publish the results of this research in scientific, medical, academic or other journals or reports, or present the results at conferences. Information that makes it easy to identify you (such as your name and contact information, SSN and medical records number) will not be part of any publication or presentation. If you have an extremely unique or rare condition that is not shared by many others, it is possible that some people may be able to determine your identity even without these identifiers.

What will be done with my data and specimens when the study is over?

We will use and may share data and/or specimens for future research. They may be shared with researchers/institutions outside of University of Minnesota. This could include for profit companies. We will not ask for your consent before using or sharing them. We will remove identifiers from your data and/or specimens, which means that nobody who works with them for future research will know who you are. Therefore, you will not receive any results or financial benefit from future research done on your specimens or data.

Data or Specimens Collected

While the investigator does not intend to use or distribute your information or samples that are collected as part of this research for future research studies, it is possible that data without any identifiers will be requested by reviewers and other scientists when the study data is presented to the scientific community.

The sponsor, monitors, auditors, the IRB, the University of Minnesota Research Compliance Office and other University compliance units, the US Office of Research Integrity (ORI), the US Office for the Protection of Human Research Protections (OHRP), the US Food and Drug Administration (FDA) may be granted direct access to your medical records to conduct and oversee the research. By signing this document you are authorizing this access. We may publish the results of this research. However, we will keep your name and other identifying information confidential.

Do I have to sign this Consent Form and give my permission to make my information, including my health information, available for use and sharing?

No, you do not have to sign this Consent Form. But if you do not sign, you will not be able to participate in this research study. Treatment available outside of the study, payment for such treatment, enrollment in health insurance plans and eligibility for benefits will not be impacted by your decision about signing this Consent Form.

Does my permission for making my health information available for use and sharing ever expire?

No, there is no expiration date.

May I cancel my permission for making my health information available for use and sharing?

Yes. You may cancel your permission at any time by writing to the researcher at the address on the first page of this Consent Form. If you cancel your permission, you will no longer be in the research study. You may also want to ask someone on the research team in canceling will affect any research related medical treatment. If you cancel your permission, any health information about you that was already used and shared may continue to be used and shared for the research study and any optional elements of the study to which you agree in this Consent Form.

What happens to my health information after it is shared with others?

When we share your information with others as described in this Consent Form, privacy laws may no longer protect your information and there may be further sharing of your information.

Will I be able to look at my records?

It is possible that the research team may not allow you to see the information collected for this study.

A description of this clinical trial will be available at http://www.ClinicalTrials.gov, as required by U.S. Law. This Web site will not include information that can identify you. At most, the Web site will include a summary of the results. You can search this Web site at any time.

Certificate of Confidentiality
To help protect your privacy, the National Institutes of Health has granted a Certificate of Confidentiality. The researchers can use this Certificate legally to refuse to disclose information that may identify you in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings, for example, if there is a court subpoena. The researchers will use the Certificate to resist any demands for information that would identify you, except as explained below.

The Certificate does not prevent a researcher from reporting information learned in research when required by other state or federal laws, such as mandatory reports to local health authorities for abuse or neglect of children/vulnerable adults, or information to the Food and Drug Administration (FDA) when required in an FDA audit. However, the Certificate limits the researcher from disclosing such information in follow up civil, criminal, legislative or administrative legal proceedings if the information was created or compiled for purposes of the research.

You also should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, medical care provider, or other person obtains your written consent to receive research information, then the researchers will not use the Certificate to withhold that information.

Will I receive research test results?

Most tests done on samples in research studies are only for research and have no clear meaning for health care. The investigator(s) will not contact you or share your individual test results.

Genetic study results:

Information from these genetic studies or future studies using this data will not be made available to you or your doctors and will not affect you or your clinical care. The genetic analyses performed in this study are not for clinical use, therefore none of the genetic results from this study will be put in your medical records. We will not contact you about specific genetic results of this study, and you will not be contacted about results of future studies using this data. All study information, including genetic results, is stored under conditions that limit access in order to protect your privacy. Genetic results will be de-identified and stored separately from your contact and personal information. Individualized identifiable genetic results will not be published. Results obtained from this study or future genetic research studies will not provide any direct benefits to you.

Will anyone besides the study team be at my consent meeting?

You may be asked by the study team for your permission for an auditor to observe your consent meeting. Observing the consent meeting is one way that the University of Minnesota makes sure that your rights as a research participant are protected. The auditor is there to observe the consent meeting which will be carried out by the people on the study team. The auditor will not document any personal (e.g. name, date of birth) or confidential information about you. The auditor will not observe your consent meeting without your permission ahead of time.

Whom do I contact if I have questions, concerns or feedback about my experience?

This research has been reviewed and approved by an IRB within the Human Research Protections Program (HRPP). To share feedback privately with the HRPP about your research experience, call the Research Participants' Advocate Line at 612-625-1650 (Toll Free: 1-888-224-8636) or go to z.umn.edu/participants. You are encouraged to contact the HRPP if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Will I have a chance to provide feedback after the study is over?

The HRPP may ask you to complete a survey that asks about your experience as a research participant. You do not have to complete the survey if you do not want to. If you do choose to complete the survey, your responses will be anonymous.

If you are not asked to complete a survey, but you would like to share feedback, please contact the study team or the HRPP. See the "Investigator Contact Information" of this form for study team contact information and "Whom do I contact if I have questions, concerns or feedback about my experience?" of this form for HRPP contact information.

Can I be removed from the research?

The person in charge of the research study can remove you from the research study without your approval. Possible reasons for removal include:

- If the study staff feels it is unsafe for you to continue
- If you do not comply with study procedures
- If you are unable to tolerate the tDCS
- If you are no longer able to provide your consent for research

We will tell you about any new information that may affect your health, welfare, or choice to stay in the research

What happens if I am injured while participating in this research?

In the event that this research activity results in an injury, treatment will be available, including first aid, emergency treatment and follow-up care as needed. Care for such injuries will be billed in the ordinary manner, to you or your insurance company. If you think that you have suffered a research related injury let the study physicians know right away.

Will I be compensated for my participation?

If you agree to take part in this research study, we will pay you up to **$375** for your time and effort.

If you do not complete the study, you will be paid for the visits you complete.

- Baseline Interview: $25 for finishing the baseline questionnaires
- Brain Training Days (10 visits): $10 each day (up to $100)
- Post-Intervention Interview: $25 post-intervention questionnaire
- Follow-up visit 1: $25
- Follow-up visit 2: $50
- Follow-up visit 3: $75
- Follow-up visit 4: $100

Payment will be made using a pre-paid debit card called Greenphire ClinCard. It works like a bank debit card. We will give you a debit card and each time you receive a payment for participation in this study, the money will be added to the card after each completed visit.

You may use this card at any store that accepts MasterCard or you can use a bank machine to remove cash. However, there may be fees drawn against the balance of the card for cash withdrawals (ATM use) and inactivity (no use for 3 months). We will give you the ClinCard Frequently Asked Questions information sheet that answers common questions about the debit card. You will also receive letters with additional information on how you can use this card and who to call if you have any questions. Be sure to read these letters, including the cardholder agreement, for details about fees.

The debit card system is administered by an outside company. The company, Greenphire, will be given your name and social security number. They will use this information only as part of the payment system. Your information will not be used for any other purposes and will not be given or sold to any other company. Greenphire will not receive any information about your health status or the study in which you are participating.

Additionally, you will have the option to receive updates related to appointment reminders and payment reminders and updates via text message and email message (Standard text messaging rates will apply). You will have the opportunity to opt-in to receive these messages, you are not required to provide your cell phone or email address to be enrolled in the study or use a ClinCard. If you choose to receive messages and decide at a later date that you want to stop these messages, you will have the ability to opt-out.

Any demographic information collected and provided to Greenphire is stored in a secure fashion and will be kept confidential, except as required by law.

Payment you receive as compensation for participation in research is considered taxable income. If payment to an individual equals or exceeds $600 in any one calendar year, the University of Minnesota is required to report this information to the Internal Revenue Service (IRS). Research payments to study participants that equal or exceed $600 during any calendar year will result in a FORM 1099 (Miscellaneous Income) being issued to you and a copy sent to the IRS.

Optional Elements:

The following research activities are optional, meaning that you do not have to agree to them in order to participate in the research study. Please indicate your willingness to participate in these optional activities by placing your initials next to each activity.

Yes, I agree	**No, I disagree**	
_____	_____	I give permission to collect saliva for the optional genetic study.
_____	_____	I give permission to store my saliva and genetic material after completion of this study for future genetic research. I understand that my stored sample will be kept in a non-identifiable form to prevent anyone from identifying me.
_____	_____	I would like to receive reminders using Greenphire. If yes, provide the following contact information: Email Address: _____ Phone Number: _____

_____	_____	You may record audio and/or video of my assessment interviews. (This helps us as a research team to maintain consistency in interviewing methods across different researchers)
_____	_____	You may contact me in the future about other research opportunities. If you contact me in the future, I may choose at that time whether or not I would like to participate in that research study.

SIGNATURES

Your signature documents your permission to take part in this research. You will be provided a copy of this document. Please let study staff know if you would like a signed copy of this form.

Participant signature: _____
[Please hold down your cursor and sign your name electronically]

Please type your FULL NAME here: _____

Please type today's date: _____

Email address of participant: _____

Please type the FULL NAME of the research staff member who went over this consent with you: _____

Please type today's date: _____

Please type the CODE provided to you by the research staff member: _____

PLEASE CLICK ON THE LINK BELOW TO DOWNLOAD A COPY OF THIS FORM FOR YOUR RECORDS:

[Blank PDF copy of consent form]