

International Conference on Drug Prevention, Treatment and Care – Inspiration and Direction

Drug Prevention – Innovations around the Globe

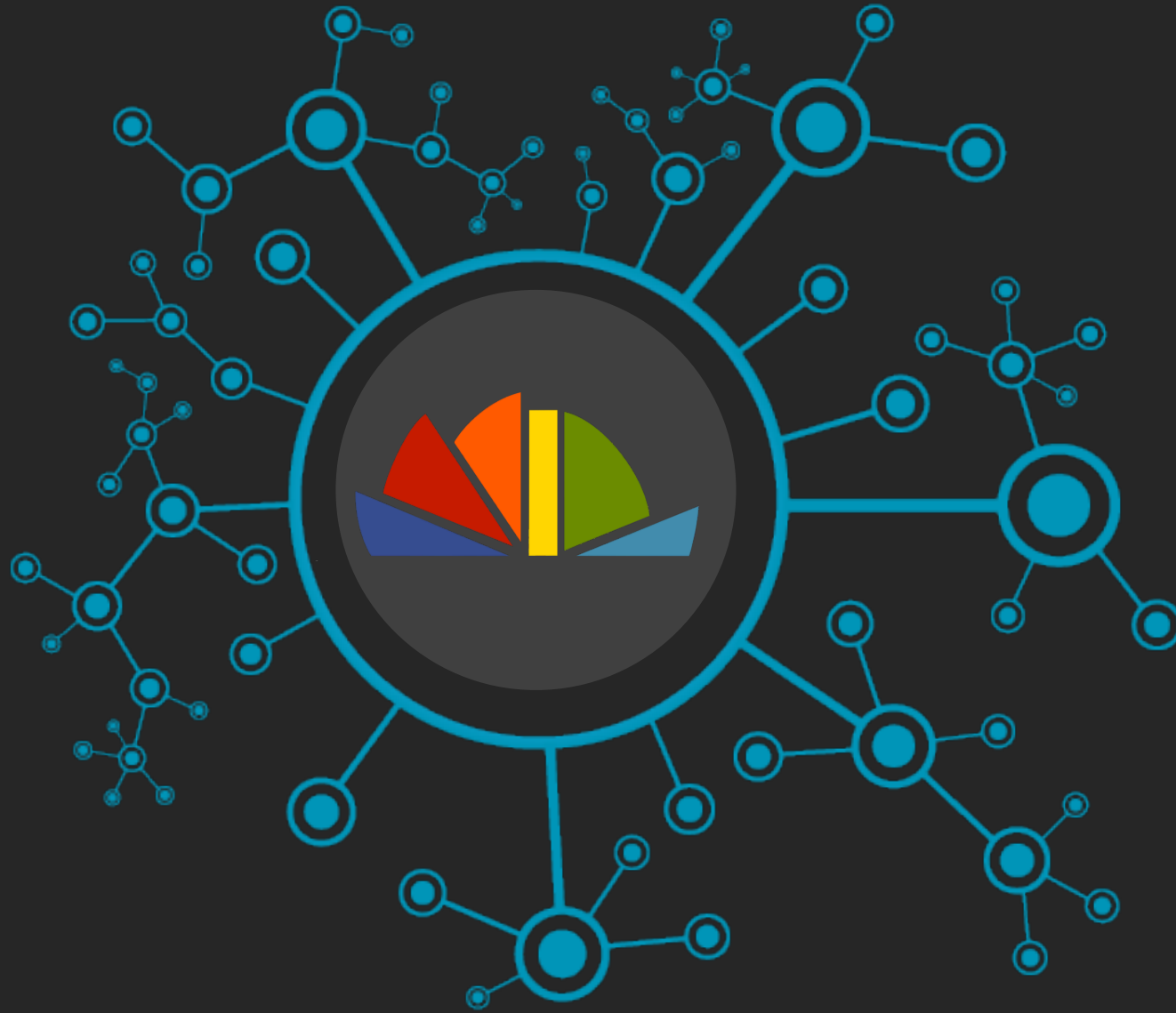
# Neuroscience for prevention programs: Experiences from Mexico

Silvia L. Cruz

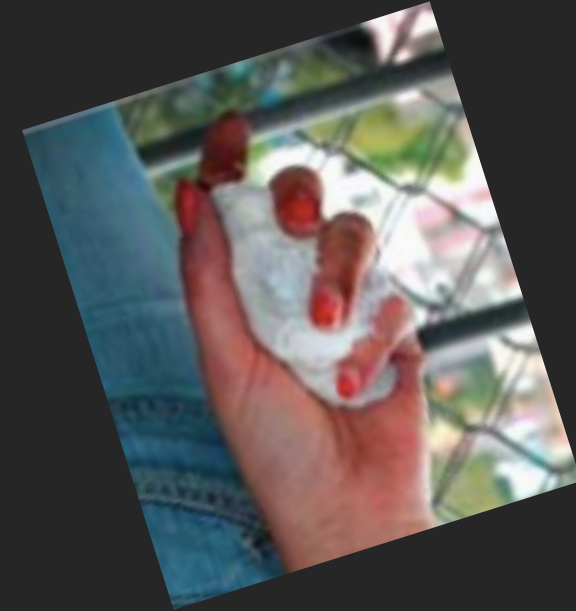
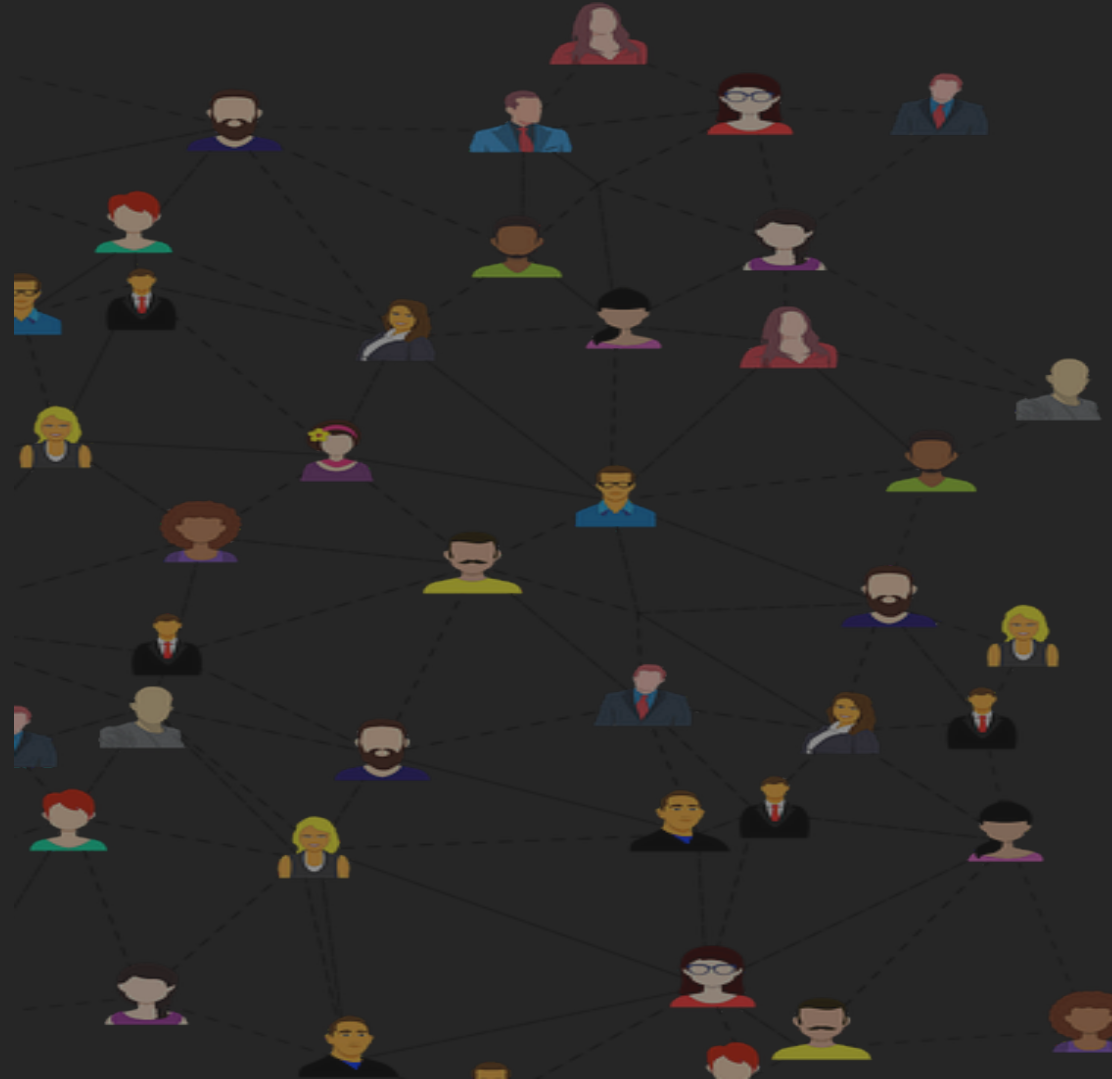
July, 2019

Center for Research and Advanced Studies (Cinvestav), Mexico

# Amber Interactive Centre



# Inhalant misuse prevention

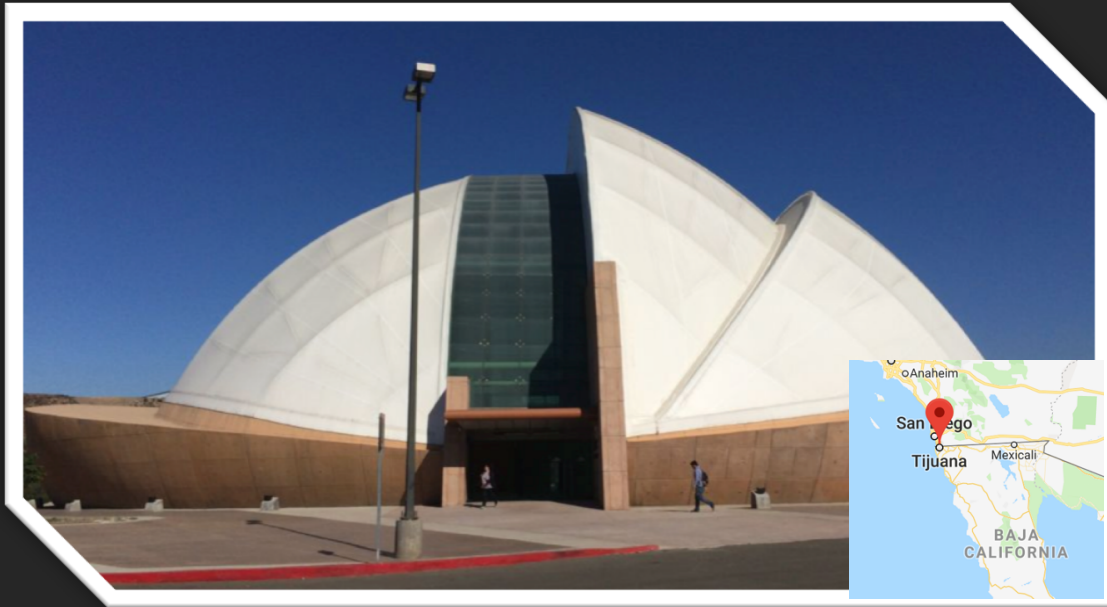




# AMBER

Evidence-based drug use prevention model.

For 5<sup>th</sup>- 9<sup>th</sup> graders (11-15 years of age)



Museum located in Tijuana,  
Mexico  
(South of San Diego, USA).



Wandering  
museum

### Fundación Nacional Ámbar

Pedro Ramírez Campuzano  
Nelly Ramírez Mota Velasco  
Alejandro Rivera

### Architectonic project

Pedro Ramírez Vázquez  
Gerardo Gallo Casas

### NIDA

Nora Volkow  
Ruben Baler  
Wilson Comptom  
Jacqueline Lloyd

Federal and local  
authorities, civil society

### INPRFM

María Elena Medina-Mora  
Nancy Amador  
Patricia Bermúdez



## Collective minds project

### Scientific Committee

Dr. Jesús Kumate Rodríguez – Fundación IMSS  
Dr. Pablo Rudomín Zevnovaty -CINVESTAV  
Dr. Ranulfo Romo Trujillo - UNAM  
Dra. Silvia Cruz Martín del Campo –CINVESTAV  
Dr. José Franco López- UNAM  
Lic. Carmen Fernández Cáceres – CIJ  
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Dr. José Antonio Stephan De La Peña -CIMAT  
Dra. Rosaura Ruiz Guitiérrez - UNAM  
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Dra. Marcela Tiburcio Saenz - INPRFM  
Mtra. Guillermina Natera Rey - INPRFM  
Presbítero Manuel Zubiaga Vázquez - CÁRITAS  
Ing. Juan Machín Ramírez - CÁRITAS  
Dr. Luis Solís Rojas – Asesor  
Dr. Víctor Guiza Cruz - SS  
Dr. Benito Antón Palma -INPRFM  
Dra. Melanie Domenech - UTAHSU  
Dra. Ana Baumann - WUSL  
Dra. Silvia Morales Chainé - UNAM  
Dra. Laura Hernández Guzmán - UNAM  
Dra. Marion Forgatch – OSLC-ISII

# Amber Program



## 1. Science and Health

Knowledge through science. Information we can use to take care of our health and build our future.

## 2. The Human Brain

Our brain is our main learning tool. It's up to us to take care of it.

## 3. Drug Effects and Risks

Certain substances can damage our brain. Drugs modify brain function even after discontinuation.

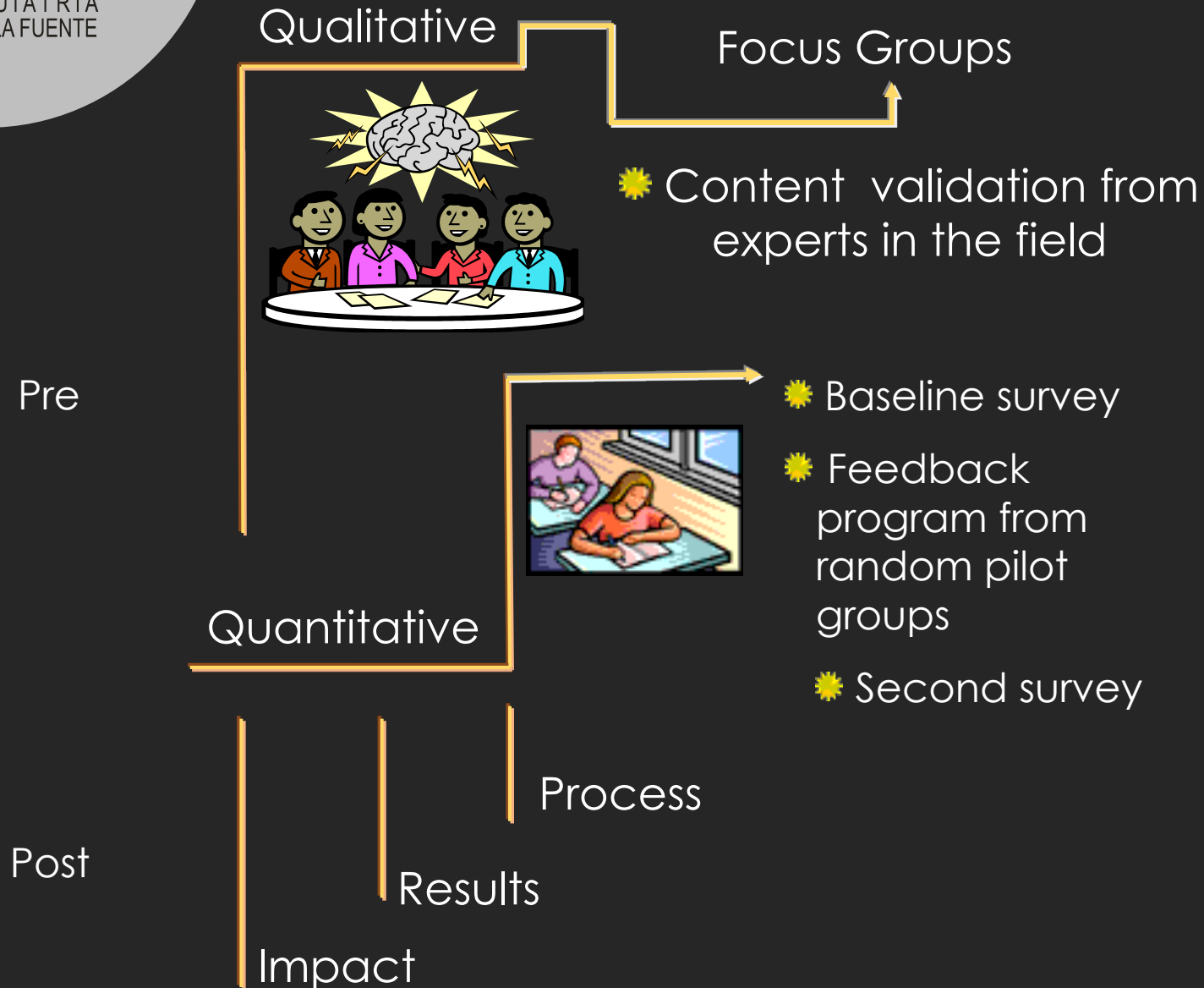
## 4. Prevention

You can choose. You can develop skills to protect yourself.

## 5. Family and Teachers

Strategies for developing positive parenting values.

# Evaluation



Post

In situ  
evaluation:

- Before visit
- After visit
- Follow up



INSTITUTO NACIONAL  
DE PSIQUIATRÍA  
RAMON DE LA FUENTE

## CQA exercise

C = What I know; Q= What I want to know A= What I learned

### CUADRO CQA

#### CEREBRO Y CUERPO HUMANO

¿Qué es lo que conozco? ¿Qué saben sobre el cerebro, dónde está, para qué sirve?	¿Qué me gustaría saber? Sobre el cerebro	¿Qué aprendí? Sobre el cerebro
Que es un organo que nos ayuda a realizar todas nuestras funciones.	Como poder cuidarlo correctamente que funciones le ayudan a nuestro cerebro	que tiene o se divide en dos partes un cerebelo y muchas partes mas y estas nos ayudan a pensar recordar etc.
¿Cómo debo cuidar mi cerebro?	Sobre, cómo cuidar mi cerebro	Sobre, cómo cuidar mi cerebro
No realizando actividades que afecten a nuestro cerebro	Como cuidarlo correcta- mente.	Que hay que hacer ejercicio y muchas actividades que nos benefician.

#### LAS DROGAS Y SU FUNCIONAMIENTO

¿Qué es lo que conozco?	¿Qué me gustaría saber?	¿Qué aprendí?
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# Multimedia experience

Different resources for each learning module

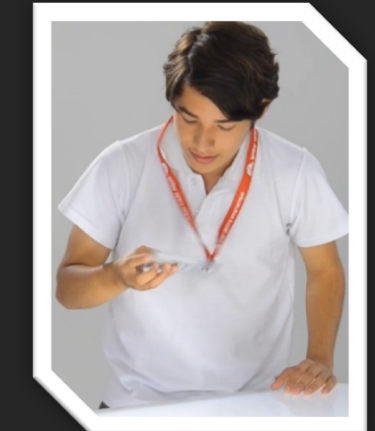
## Holograms



## 3D Laser projection



During the show  
questions are  
made to the  
audience



Interactive  
digital vote

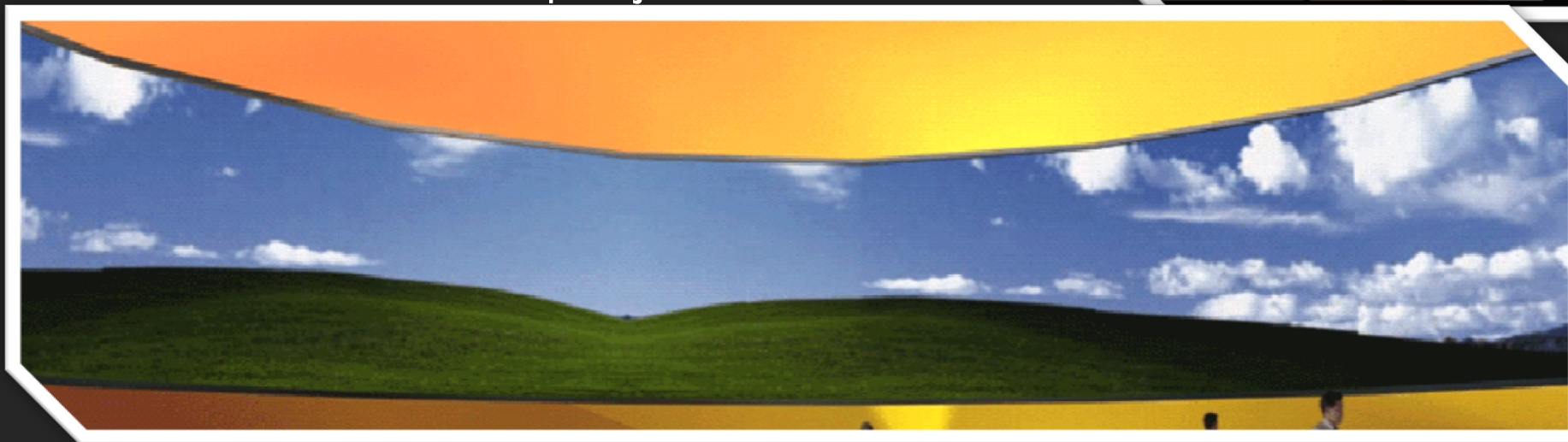
Double screen

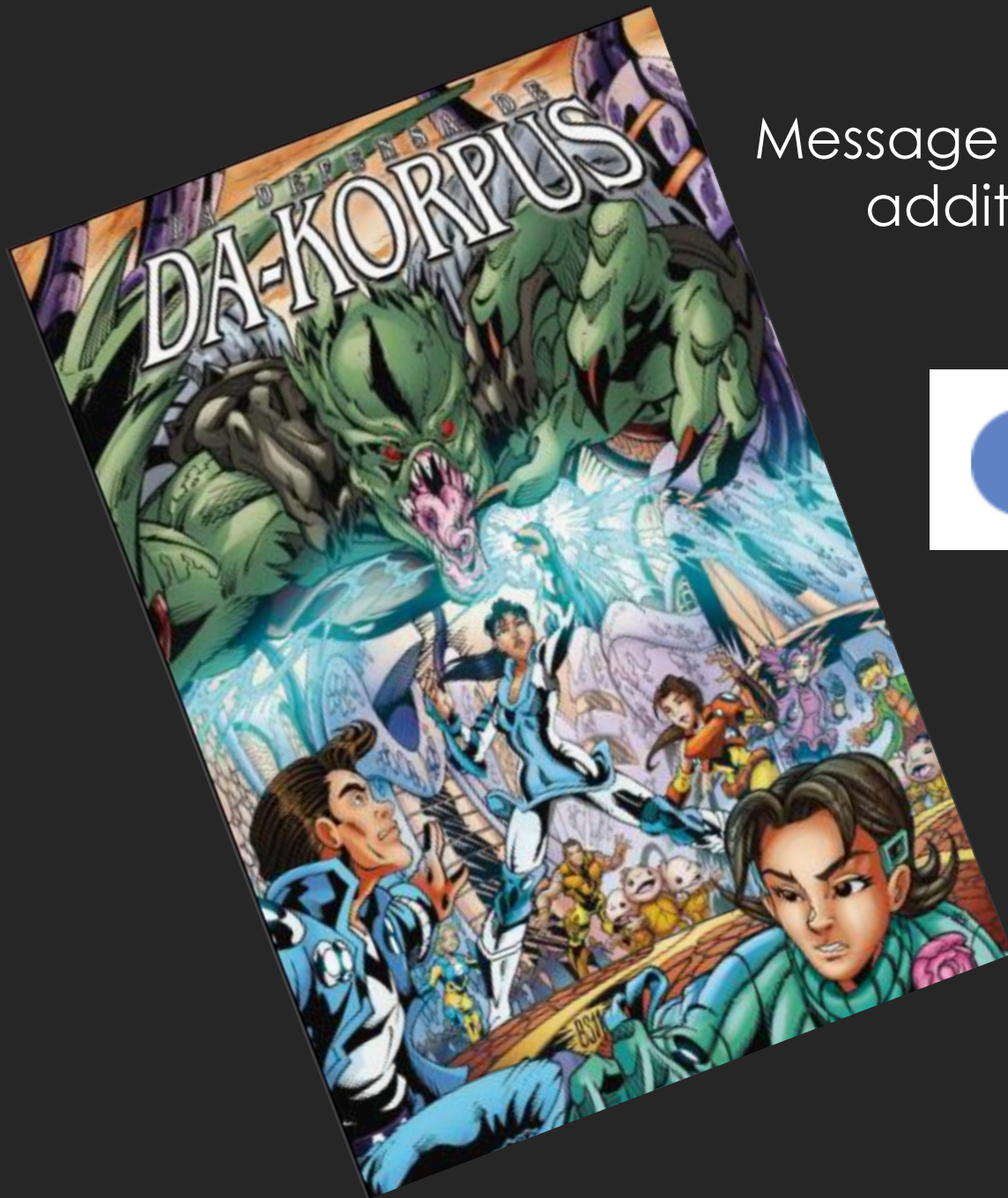


Animatic

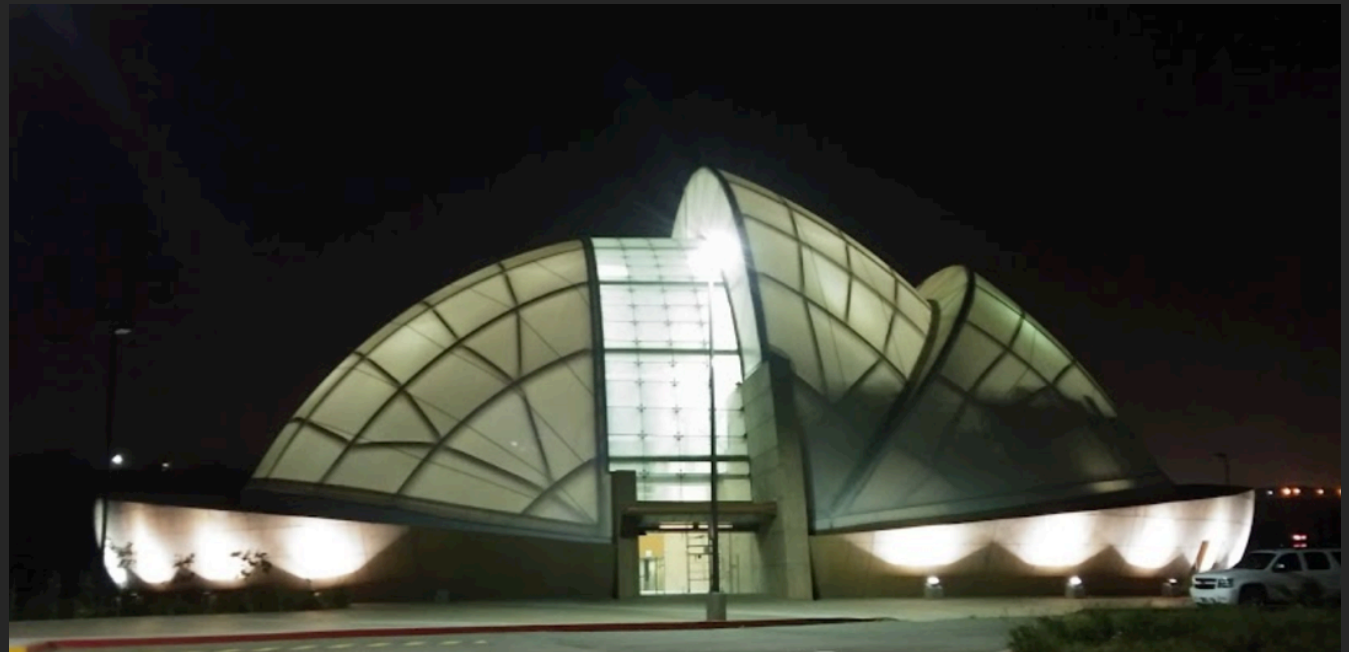


360° projection screen





Message reinforcement and  
additional resources



# Impact

Visitors (from Sept. 2016 to June 2019)

Children and adolescents

108 873

Parents and teachers

8 870

Schools

476

Tijuana's museum: 65 368

Wandering museum: 42 323

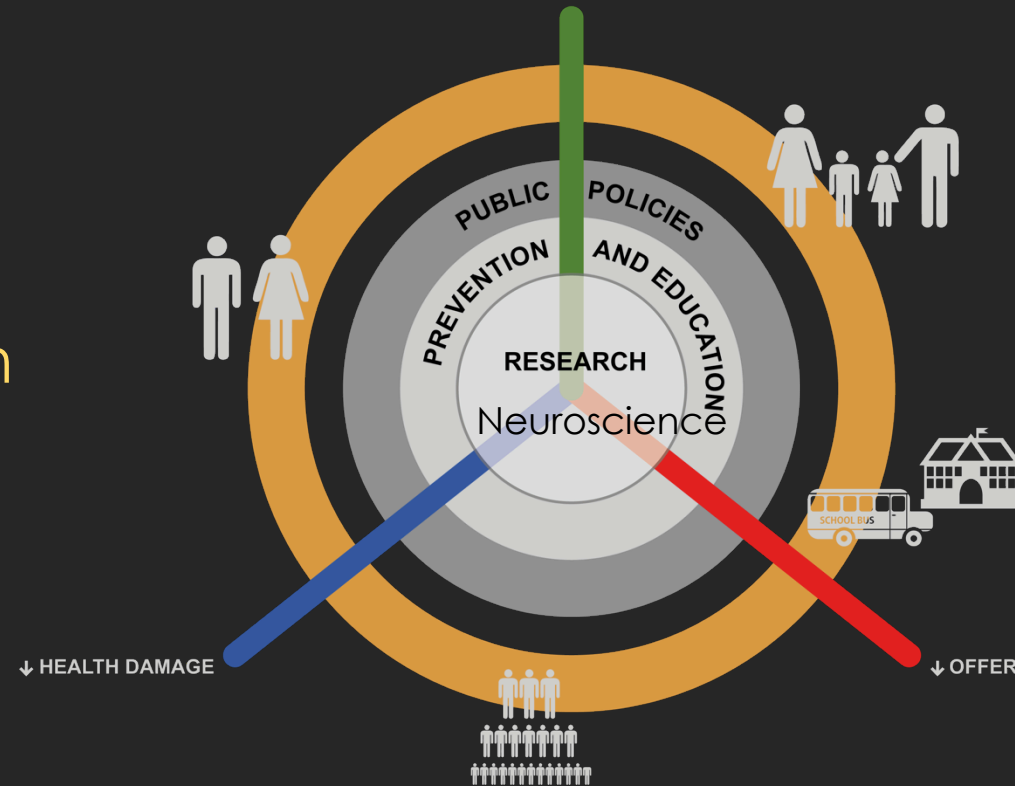
Temporary exhibition in Mexico City's "Universum" (children museum): 1 032

Pilot program for hearing impaired children: 150

# Inhalant misuse prevention strategies



Interventions in  
at-risk  
populations



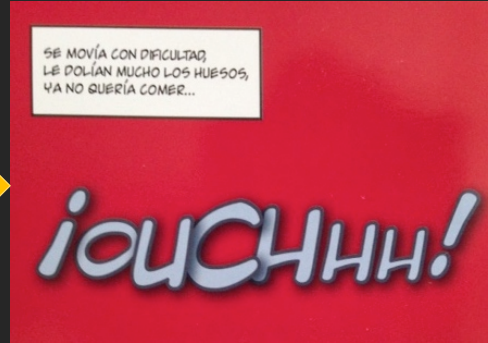
Booklets, guides,  
posters and flyers for  
parents, service  
providers and  
teachers

Art contests in  
schools

Inhalant Working Group Forum  
NIDA – USA – Mexico – Canada

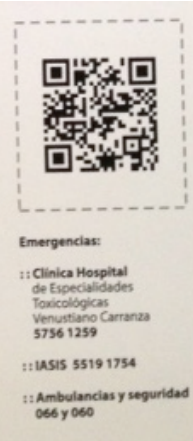
# Interventions in at-risk populations

Informative  
cards  
distribution

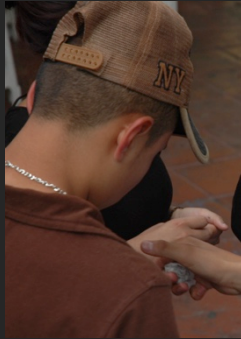


If you, or someone you know, have 3 or more of these symptoms, you must seek medical care.

- ☐ Pain in arms and legs
- ☐ Immobility
- ☐ Cramps
- ☐ Breathing difficulties
- ☐ Vomit
- ☐ Diarrhea
- ☐ Lack of appetite



“mona”-wristband  
exchange  
program



Emergency phone  
numbers



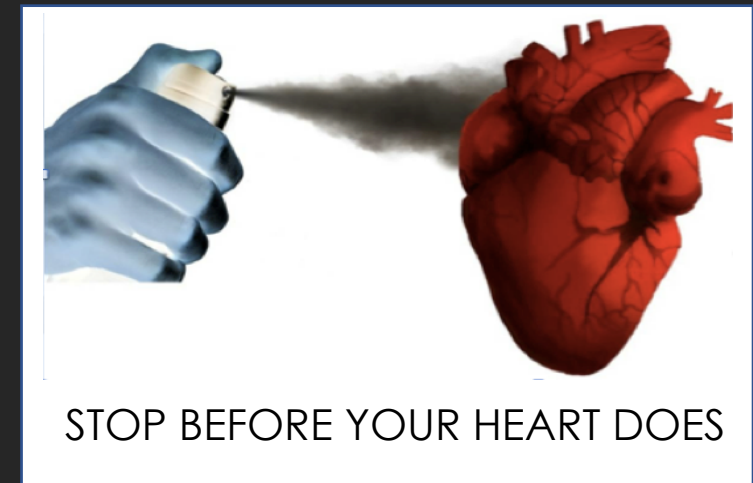
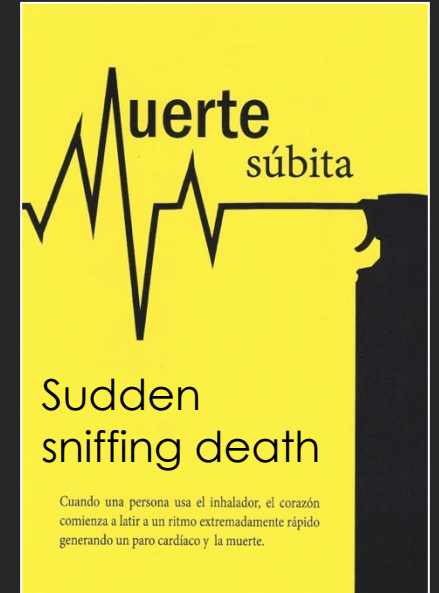
Clinical  
Toxicology  
Hospitals



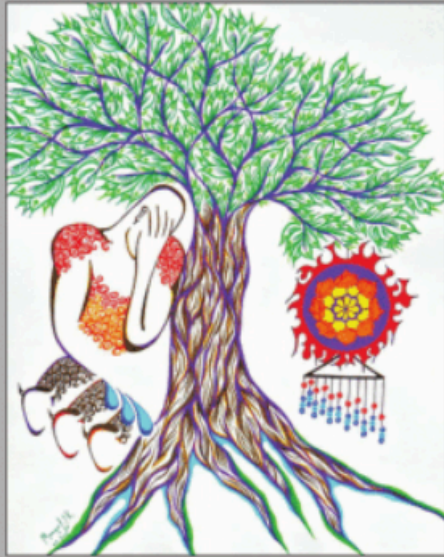
# Prevention guides, booklets



## Art contests



# Inhalant Working Group Forum NIDA – USA - Mexico - Canada



## SUBSTANCE USE & MISUSE

An International Interdisciplinary Forum

Special Issue on  
Volatile Substance Misuse: A Global Perspective

Volume 46

Number S1

2011

**NIDA**  
International Program  
National Institute on Drug Abuse  
National Institutes of Health  
U.S. Department of Health and Human Services

**informa**  
healthcare

# Foro

## Internacional sobre uso indebido de psicoactivos volátiles (Inhalables)

2ª Reunión de Investigadores IAPA

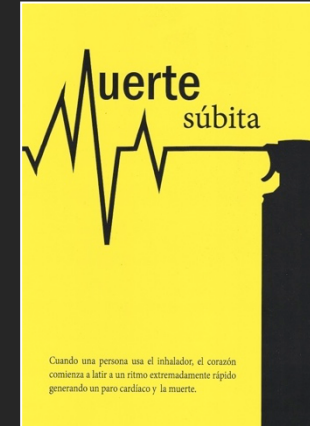
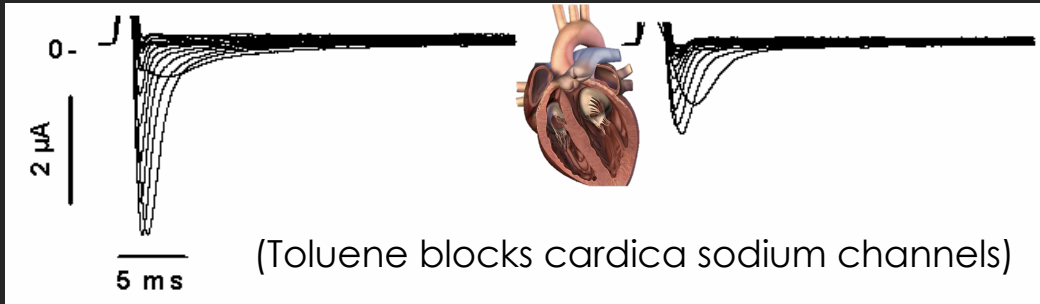
### MEMORIAS

La Comisión Nacional contra las Adicciones, El  
Centro Nacional para la Prevención y el  
Control de las Adicciones y el Instituto  
para la Atención y Prevención de las  
Adicciones en la Ciudad de México (IAPA)

Aimed at policy makers,  
researchers, service providers,  
and solvent industry executives

# Evidence-based prevention messages

Inhalants can alter heart rhythm and produce sudden sniffing death



Inhalant vapours are heavier than air and do not dissipate easily. Smoking after inhaling can cause explosions.

Sniffing during pregnancy can harm your baby



# What's in a name?

Compressed "air"



Duster



Proper labelling

# Inhalant misuse management. The experience in Mexico and a literature review

## Interviews with:

- El Caracol A.C. (NGO)
- Hospital Toxicológico Venustiano Carranza
- Centros de Integración Juvenil

### SIGNS AND SYMPTOMS

CNS: unconsciousness, dizziness, ataxia, confusion, hallucinations, seizures

Pulmonary: dyspnea, tachypnea, bronchospasm (wheezing)

CV: tachycardia, hypotension, **arrhythmias**

Gastrointestinal: vomiting, nausea, diarrhea

Musculoskeletal: weakness, pain in arms and legs, spasticity, cramps

Dermatologic: defating dermatitis around nose, mouth and hands; burns

Decreased sensitivity in stocking and glove distribution

### LAB STUDIES

Evaluate cerebral MRI

Chest radiography

Spirometry

EKG

Blood analysis

- Complete blood count;
- Bilirubin and liver enzymes levels
- Serum electrolytes (**hypokalemia**)
- Creatinine
- BUN (blood urea nitrogen),
- Arterial gasometry.

Urine analysis

- general
- hippuric acid

### MANAGEMENT

Supplemental oxygen

Evaluate cardioversion

Replenishment of potassium and other electrolyte deficiencies

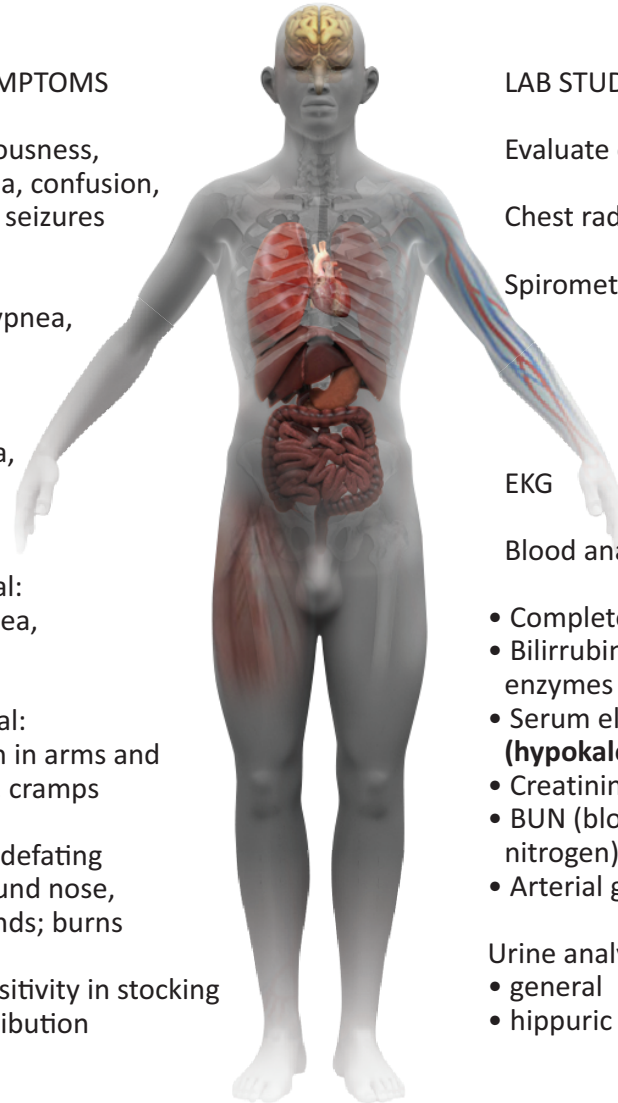
Evaluate i.v. fluids to increase blood pressure

Avoid using adrenergic agonists

Evaluate use of sodium carbonate for severe acidosis

For nitrites: methylene blue

For nitrous oxide: vitamin B<sub>12</sub> supplementation



# Neuroscience

