



WIP: 2022

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Content

- 1 Intro
- 2 Novel addiction treatments from social media
- 3 2,4-Dinitrophenol
- 4 Clinical Decision Tool for Novel Synthetic Opioids
- 5 Predicting SAR of Novel Substances
- 6 Identifying rare adverse events from COVID Therapeutics
- 7 Apply AI to Pediatric Poisoning
- 8 Queens Research

Report Card



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Project	Milestones	Difficulties	Funded	Collaboration
Identify novel opioid addiction treatments from social media	Nothing published		Topic of DP5, CDRMP	
Estimating sublethal 2,4-DNP use from social media	Nothing published	In between CS and medicine		
Developing a clinical decision tool to identify non-canonical presentations of opioid agonist toxicity	Nothing published			Habboushe?
Developing a neural network to classify the structure of novel psychoactive substances as primarily (opioid, phenethylamine, tryptamine, cannabinoid, or benzodiazepine)	Nothing published			
Identify previously unknown adverse effects from COVID-19 therapeutics	1 review published, 2 pre-accepted	ACMT data collection not rigorous enough to allow for original research	Yes, by FDA	FDA, ACMT
Developing an ontology of pediatric poisoning	Nothing Published	Bandwidth	No	Yes, Lyon

Who I work with



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Andrew Moreno (WCM Class of 24, AOC): Decision Tool

Abdel Abdelati (NYP-Qatar, Class of 24): DNP

Ciara Balanzá (High School): Neural Network

Stefan Bartell, PhD: Drug Discovery, Ontology



Background: Rising OUD, marginally ineffective treatments

Insight: Online Discussions are a Proxy for
Self-Experimentation

Hypothesis: Online Discussions May Identify Druggable
Lead Compounds

Approach

- NLP of Social Media

- Link social media data with established effects via ontology

Work To Date

Next Steps

Preliminary Data



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In One Page



Background: Disordered eating; alluring supplement used despite FDA ban

Insight: Online Discussions are the only human data source

Hypothesis: Online Discussions May Identify Dose-Effect Relationships

Approach

- NLP of Social Media

- Link social media data with established effects via ontology

Work To Date

Next Steps

In One Page



Background: New opioids (seem to) cause more toxicity than traditional toxidrome

Insight: Ontologies can support MDM more transparently than other approaches

Approach

- Ontology of Novel Synthetic Opioids

- Software Development (MD Calc integration?)

Work To Date

Next Steps

In One Page



Background: People describe self-treatment online

Insight: Online Discussions May Identify Druggable Lead Compounds

Approach: NLP \Rightarrow CNN \Rightarrow Ontology

Work To Date

Next Steps

In One Page



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The FDA has contracted with ACMT to identify adverse events from COVID therapeutics (multi-site data collection)

We are reporting.

Just started screening specific populations (pregnant, pediatric).

In One Page



Background: AI can identify the causes of some poisonings in adults. Children aren't small adults.

Insight: Markov logic can extend ontologies

Approach: Clinical Data \Rightarrow Markov Coefficients; Ontology

Work To Date

Next Steps

What's an Ontology?



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Tracking Grid

Project	Milestones	Difficulties	Funded	Collaboration
Effect of Translator Use on TTD, Pain Medication	In Revision			
Digital Phenotypes of DKA by Dispo	Applying for IRB			Yiye?
RCT of proning in mild COVID	Writing manuscript			