

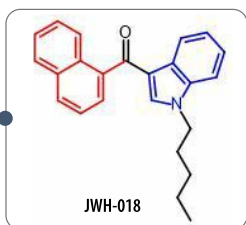
## Appendix C. Drug Taxonomy: Framework for Subclassification and Naming of Novel Psychoactive Substances

This framework tool can assist forensic scientists seeking to better understand how drugs are classified by structural components. It is broken down by NPS classes (e.g., opioids) and then further subdivided by subclassifications of each NPS class (e.g., fentanyl analogs). This framework provides potential names for a substance, a figure with a drug structure from the subclass (with core components highlighted), and an example substance that fits within this subclassification. Users of this framework can easily follow this layout to understand how NPS are subclassified and how those drug molecules could be named. The framework was created to be a standalone poster to use as a reference. This alleviates scientists of the need to check multiple sources and allows for quicker association with naming convention and nomenclature. **Although this framework tool helps users understand the drug-naming process, it does not provide a means to predict and name future unknown substances by simply following this subclassification scheme and framework.**

# Drug Taxonomy: Framework for Subclassification and Naming of Novel Psychoactive Substances (NPS)

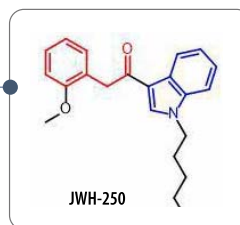
**Naphthoylindoles**  
 Naphthoylindazoles  
 Naphthylmethylindoles  
 Naphthylmethylindazoles  
 Naphthylmethylcarbazoles

Contain head naphthyl moiety (red) accompanied by either core indole, indazole, carbazole, or methyl moiety (blue)



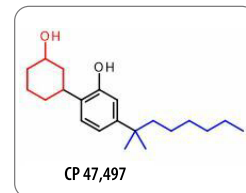
**Phenylacetylindoles**  
 Phenylacetylindazoles

Contain head/linker phenylacetyl moiety (red) accompanied by either core indole or indazole moiety (blue)



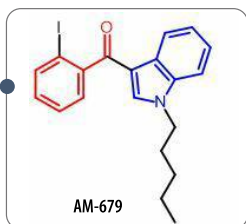
**Cyclohexylphenols**

Contain core cyclohexylphenol moiety (red) accompanied by a lipophilic tail moiety (blue)



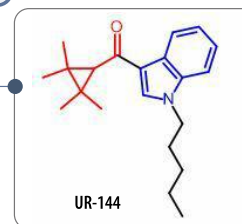
**Benzoylindoles**  
 Benzoylindazoles

Contain head/linker benzoyl moiety (red) accompanied by either core indole or indazole moiety (blue)



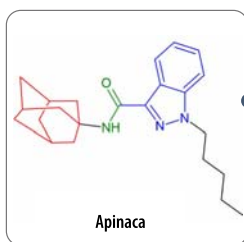
**Tetramethylcyclopropanoylindoles**  
 Tetramethylcyclopropanoylindazoles

Contain head/linker tetramethylcyclopropanoyl moiety (red) accompanied by either core indole or indazole moiety (blue)



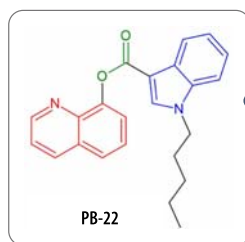
**Adamantylindoles**  
 Adamantylindazoles  
 Adamantylindole carboxamides  
 Adamantylindazole carboxamides

Contain head adamantyl moiety (red) accompanied by either core indole or indazole moiety (blue) with amide or ester linker (green)



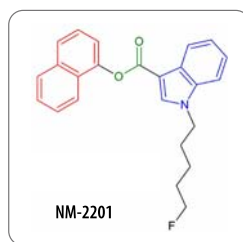
**Quinolinyndolecarboxylates**  
 Quinolinyndazolecarboxylates  
 Quinolinyndolecarboxamides  
 Quinolinyndazolecarboxamides

Contain head quinoliny or isoquinoliny moiety (red) accompanied by core indole or indazole moiety (blue) with amide or ester linker (green)



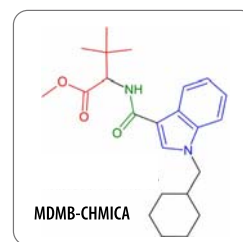
**Naphthylindolecarboxylates**  
 Naphthylindazolecarboxylates  
 Naphthylindole carboxamides  
 Naphthylindazole carboxamides

Contain head naphthyl moiety (red) accompanied by either core indole or indazole (blue) with amide or ester linker (green)



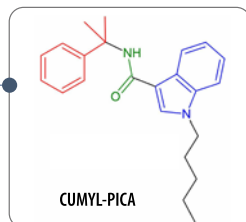
**Alkylcarbonyl indole carboxamides**  
 Alkylcarbonyl indazole carboxamides  
 Alkylcarbonyl indole carboxylates  
 Alkylcarbonyl indazole carboxylates

Contain head alkylcarbonyl moiety (red) accompanied by either core indole or indazole (blue) with amide or ester linker (green)



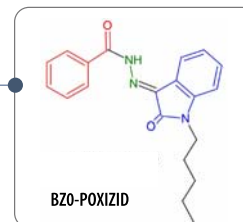
**Cumylindolecarboxamides**  
 Cumylindazolecarboxamides

Contain head N-(2-phenylpropan-2-yl) moiety (red) accompanied by either core indole, indazole, or other (blue) with amide or ester linker (green)



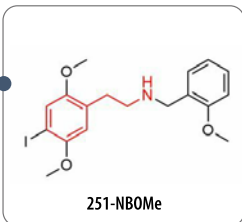
**Oxidole Hydrazides**

Contain head alkylcarbonyl moiety (red) accompanied by a core 2-oxindole (blue) and hydrazide linker (green)



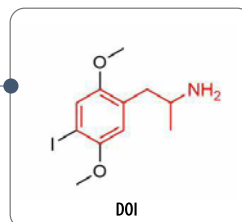
### Substituted Phenethylamines

Contain the phenethylamine core structure (in red) but with no substitutions on the alpha or beta carbon; the amine may or may not have an alkyl group or groups



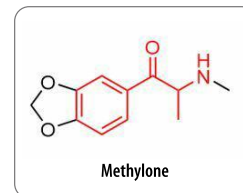
### Simple Substituted Amphetamines

Contain the phenethylamine core structure and an alkyl substitution on the alpha, but no beta carbonyl (in red); the amine may or may not have an alkyl group or groups



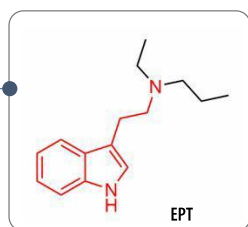
### Substituted Cathinones

Contain the phenethylamine core structure, at least one-carbon-chain off the alpha carbon, and a beta carbonyl (in red); the amine may or may not have an alkyl group or groups



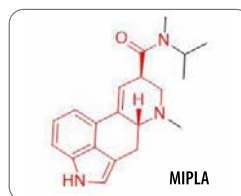
### Substituted Tryptamines

Contain tryptamine core structure (red); the amine may or may not have an alkyl group or groups



### Lysergamides

Contain core structure similar to LSD



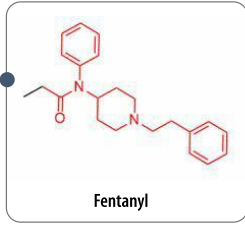
### Substituted Arylcyclohexylamines

Contain arylcyclohexylamine core structure; there may or may not be a ketone in the 2-position on the cyclohexane ring



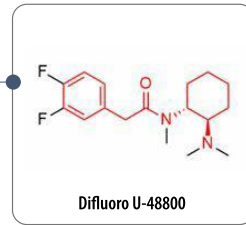
**Fentanyl Derivatives**

Contain core structure similar to fentanyl



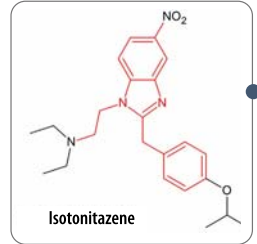
**U-series Derivatives**

Contain cyclohexylamino group and benzyl or phenyl group connected by an amide



**Benzimidazoles (Nitazenes)**

Contain benzimidazole core (with or without nitro group), substituted benzyl group, and substituted ethylamino group



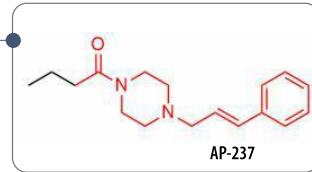
**Benzimidazolones**

Contain benzimidazolone, piperidine, and benzyl group



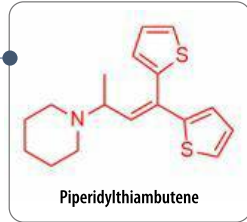
**Cinnamylpiperazines (APs)**

Contain cinnamylpiperazine and alkylcarbonyl



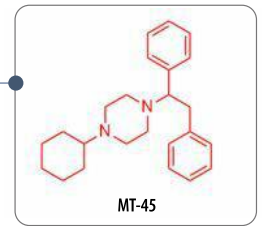
**Thiambutenes**

Substituted (RS)-4,4-dithiophen-2-yl-but-3-en-2-amine



**Benzimidazolones**

1-substituted-4-(1,2-diphenylethyl)piperazine derivatives



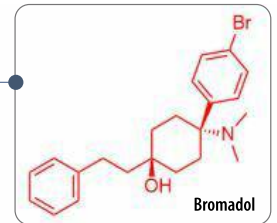
**Viminols**

Based on the core of viminol – 1-[1-[(2-Chlorophenyl)methyl]pyrrol-2-yl]-2-[di(butan-2-yl)amino]ethanol



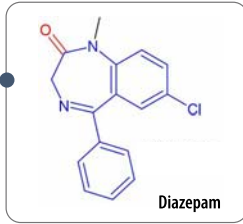
**Bromadol**

Arylcyclohexylamine containing benzyl group and phenethyl group

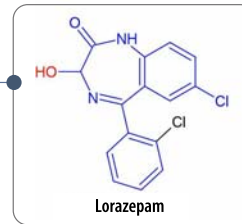


**2-Keto**

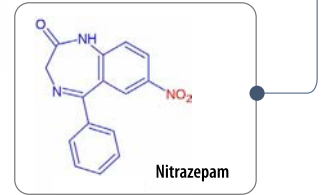
Contain a carbonyl (red) in position 2 of the benzodiazepine ring (blue)

**3-Hydroxy**

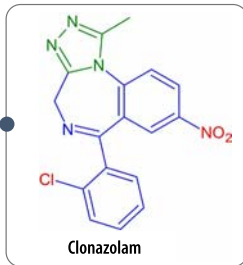
Contain a hydroxy group (red) in the third position of the benzodiazepine ring (blue)

**7-Nitro / 8-Nitro**

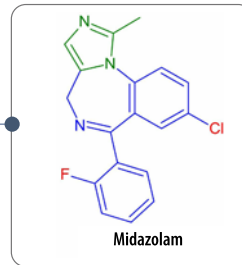
Contain a nitro group (red) in the 7 or 8 position of the benzodiazepine ring (blue)

**Triazolo**

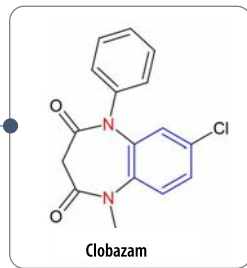
Tricyclic benzodiazepines that contain an additional fused triazole ring (green)

**Imidazo**

Contain a five-member ring with 2 nitrogens (imidazole group) (green)

**1,5-Benzodiazepines**

Bicyclic compounds with nitrogen atoms at 1 and 5 positions (red) in a seven-membered ring fused to a benzene (green), rather than the 1,4 positions

**Thienodiazepine**

Contains a diazepine ring (blue) fused to a thiophene ring (red) and a triazole group (green)

