

Supplementary Material

‘Skunky’ Cannabis: Environmental Odor Troubleshooting and the ‘Need-for-Speed’

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Table S1. Chronological summary of uncovering the link between 321MBT and ‘skunky’ cannabis (C) /hemp (H) odor.

	Date	Item	Discovery & Public Disclosure	Cannabis (C) / hemp (H)
1	Dec 10, 2015	Rice & Koziel published a peer-reviewed article linking 5 chromatographic retention regions with 'skunky' odor emissions from cannabis; including the retention region for 321MBT. The 5 chromatographic retention regions were identified as to 'onion' / 'skunky' odor character by this MDGC-MS-Olfactometry based odor profiling research	321MBT was not identified, but the article was peer-reviewed and published in open-access	C
2	Jan 21, 2020	Abstrax Tech filed a Provisional Patent application	Discovery of specific linking of 321MBT with the 'skunky' odor in cannabis. Not published; not public	C
3	Feb 10, 2020	Abstrax Tech blog posted	Posted online without reference to 321MBT, a.k.a. prenyl mercaptan	C
4	Mar 09, 2020	Abstrax Tech filed a Press Release	Posted online without reference to 321MBT, a.k.a. prenyl mercaptan	C
5	Apr 06, 2020	Abstrax Tech filed Provisional Patent application	Discovery of specific linking of 321MBT with the 'skunky' odor in cannabis. Not published; not public	C

6	Oct 09, 2020	Interim Report to Byers Scientific	Discovery of specific linking of 321MBT with the 'skunky' odor in industrial hemp. Not published; not public	H
7	Jan 21, 2021	Abstrax Tech filed a formal Patent Application with USPTO	Not published; not public	C
8	Feb 03, 2021	Abstrax Tech filed a formal Patent Application with USPTO	Not published; not public	C
9	Mar 22, 2021	Byers / Koziel et al. file a formal press release specifically linking 321MBT with the 'skunky' odor of cannabis	Public disclosure; published online and date stamped	C and H
10	Apr 19, 2021	Koziel et al. submitted and presented a Plenary Lecture at the NOSE 2020 International Conference on Environmental Odour Monitoring and Control. The 321MBT priority link with the 'skunky' odor of industrial hemp and cannabis was presented as a detailed case study, illustrating the application of odorant prioritization; the invited subject of the presentation	Not published, but date stamped and presented to conference participants	C and H
11	Apr 21, 2021	Danielle Gehr. Ames Tribune. <i>Why does cannabis smell like skunk? This Iowa State professor has answers.</i>	Published and date stamped; refers to the March 22, 2021 Press Release and the Rice & Koziel, 2015 peer-reviewed published paper	C and H
12	Apr 23, 2021	Koziel et al. uploaded NOSE 2021 Plenary Lecture conference presentation to the ASTM D-22.05 (Indoor Air Quality) subcommittee, WK72782 Workgroup support file repository	Not published, but date stamped; presented to the ASTM D-22.05 (Indoor Air Quality) subcommittee members	C and H
13	Jun 22, 2021	Chane Leigh. Veriheal. <i>Researchers May Have Discovered the Cause of the Skunky Smell from Cannabis.</i>	Published and date stamped, refers to Gehr article	C and H

14	Aug 19, 2021	USPTO publication of Abstrax Tech Patent Application US 2021/0253976A1	Public disclosure. Published and date stamped	C
15	Aug 19, 2021	USPTO publication of Abstrax Tech Patent Application US 2021/0251268A1	Public disclosure. Published and date stamped	C
16	Nov 12, 2021	Oswald et al. published the comprehensive article describing the discovery in ACS Omega (ACS Omega 2021, 6, 47, 31667–31676)	Peer-reviewed and published online	C
17	Jan 25, 2022	Koziel et al. submitted a Viewpoint (this article) to ACS Omega highlighting: (1) the chronology of discovery and public disclosure relative to 321MBT and ‘skunky’ cannabis/hemp odor; (2) simpler and faster approach for uncovering links between priority odorants and chemical emissions	This Viewpoint	C and H