A review on biological processes for pharmaceuticals wastes abatement – a growing threat to modern society

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SUPPORTING INFORMATION

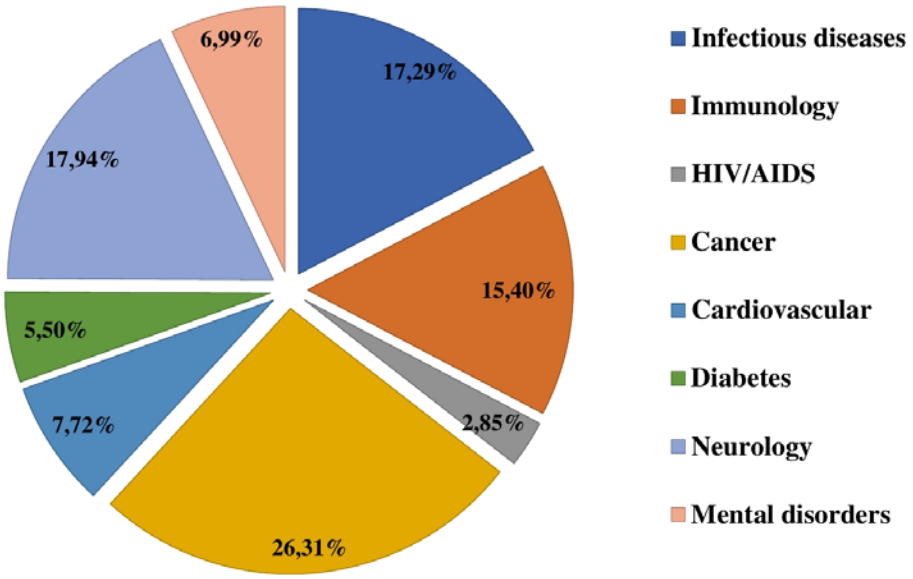

Figure S1. Medicines in development - selected categories (adapted from The International Federation of Pharmaceutical Manufacture & Associations[1]).

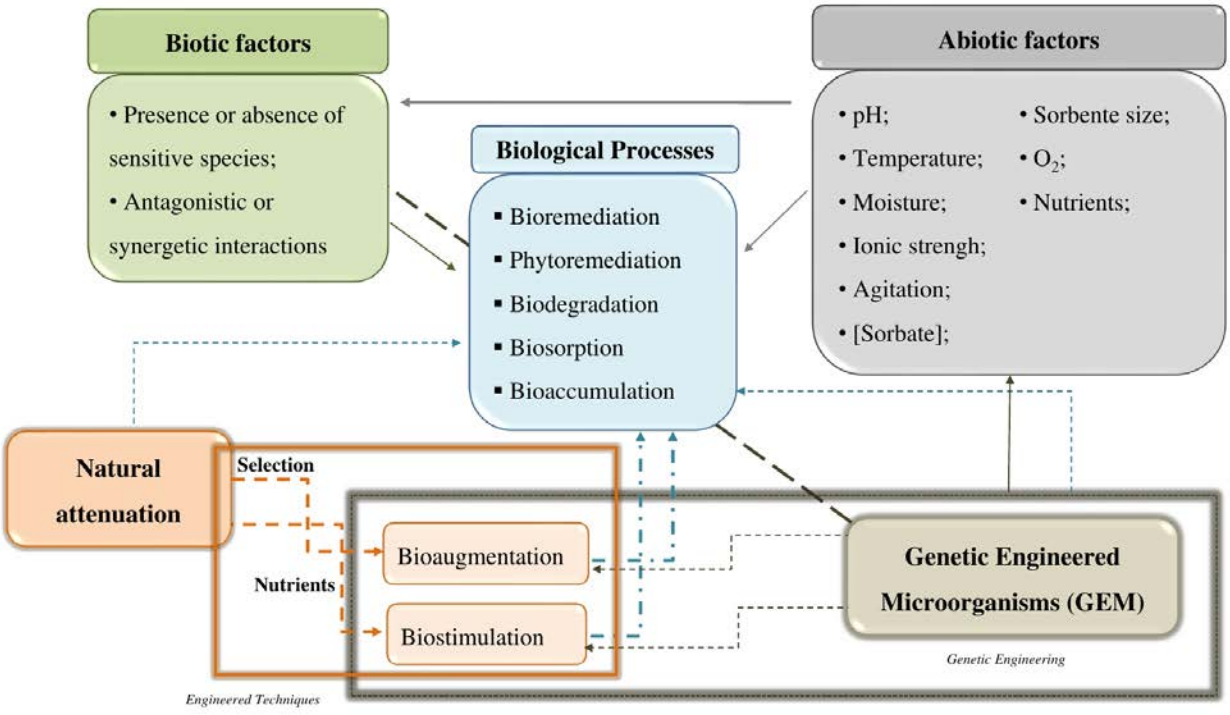

Figure S2. Schematic summary regarding the application of biological processes to contaminated environmental matrices.

Table S1. Concentration range observed in water of the most commonly detected pharmaceutical therapeutic classes

Therapeutic class	Pharmaceutical	Concentration range detected (ng/L)	Matrix	Country	References
Antibiotics	Erythromycin	32-2910	Surface water	China	[2]
	Norfloxacin	1-142	Groundwater		
	Clarithromycin	18-6524	WWTP influents	China	[3]
	Ofloxacin	15.7–5411			
	Oxytetracycline	0.2-326			
	Sulfamethazine	01-12			
	Sulfathiazole	0.8-6.3			
	Sulfamethoxazole	0.4-61.1			
	Sulfamethazine	n.d.-123	Surface water	Portugal	[4]
	Amoxicillin	5-128		Greece	[5]
	Ciprofloxacin	n.d.-837	WWTP effluents	Portugal	[6]
	Sulfamethazine	n.d.-654	Overlying water	China	[7]
	Sulfathiazole	n.d.-135			
	Sulfamethoxazole	n.d.-115			
Anticonvulsants/ Antiepileptics	Carbamazepine	560-26520	WWTP influents	Spain	[8]
		24.9-214	Surface water	Portugal	[4]
		128-1123	Hospital effluent	Portugal	[9]
Analgesics/ Antipyretics	Paracetamol (acetaminophen)	313-4909	WWTP effluents	Portugal	[4]
		13029-58857	Hospital effluent	Portugal	[9]
		218-16900	WWTP influents	Portugal	[6]
		1040-28254		Poland	[10]
Nonsteroidal anti-inflammatory drugs (NSAID)	Ibuprofen	12557-24505	WWTP influents	Portugal	[4]
	Diclofenac	732-5402	WWTP effluents	Poland	[10]
	Naproxen	360-8920	WWTP influents	Spain	[8]
		236-3245		Portugal	[4]

n.d.- not detected/below method detection limit

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