Table S1: Summary of selected terrestrial mammal species used in the formulation of the search query. The table lists common names alongside their corresponding scientific names (genus and species), grouped by taxonomic order.

Order	Common name	Scientific name
Metatheria	Kangaroo	*Macropus rufus*
	Wallaby	*Notamacropus agilis*
	Koala	*Phascolarctos cinereus*
	Wombat	*Vombatus ursinus*
Ungulate	Cattle	*Bos taurus*
	Cow	*Bos taurus*
	Deer	*Capreolus capreolus*
	Goat	*Capra aegagrus*
	Sheep	*Ovis aries*
	Pig	*Sus scrofa*
	Giraffe	*Giraffa camelopardalis*
	Camel	Bactrian: *Camelus bactrianus* Dromedary: *Camelus dromedarius*
	Antelope	Blackbuck: *Antilope cervicapra* Mountain gazelle: *Gazella gazella*
	Horse	Domestic: *Equus ferus* Wild: *Equus caballus*
	Zebra	Plains zebra: *Equus quagga* Mountain zebra: *Equus zebra*
	Rhino	White rhino: *Ceratotherium simum* Black rhino: *Diceros bicornis*
	Tapir	Lowland tapir: *Tapirus terrestris* Malayan tapir: *Tapirus indicus*
Rodent	Squirrel	Eurasian red: *Sciurus vulgaris* Eastern gray: *Sciurus carolinensis*
	Rat	Brown rat: *Rattus norvegicus* Black rat: *Rattus rattus*
	Hamster	Golden hamster: *Mesocricetus auratus*
	Mice	House mouse: *Mus musculus*
	Porcupine	African crested: *Hystrix cristata* North American: *Erethizon dorsatum*
Lagomorph	Rabbit	European rabbit: *Oryctolagus cuniculus*
	Hare	European hare: *Lepus europaeus*
Carnivore	Lion	*Panthera leo*
	Tiger	*Panthera tigris*
	Leopard	*Panthera pardus*
	Cheetah	*Acinonyx jubatus*
	Cat	Domestic: *Felis catus* Wild: *Felid silvestris*
	Jaguar	*Panthera onca*
	Wolf	*Canis lupus*
	Fox	Swift fox: *Vulpes velox*

		Red fox: *Vulpes vulpes*
	Coyote	*Canis latrans*
	Jackal	Golden: *Canis aureus* Black-backed: *Canis mesomelas*
	Dog	*Canis familiaris*
	Bear	Brown: *Ursus arctos* Black: *Ursus americanus* Polar: *Ursus maritimus*
Primate	Gorilla	Westen: *Gorilla gorilla* Eastern: *Gorilla beringei*
	Chimpanzee	*Pan troglodytes*
	Orangutan	Bornean: *Pongo pygmaeus* Sumatran: *Pongo abelii*
	Baboon	Olive baboon: *Papio anubis* Hamadryas: *Papio hamadryas*
	Lemur	Ring-tailed: *Lemur catta*
	Monkey	Rhesus: *Macaca mulatta* Blue Monkey: *Cercopithecus mitis*
Proboscidea	Elephant	African: *Loxodonta africana* Asian: *Elephas maximus*
Xenarthra	Slot	Brown-throated sloth: *Bradypus variegatus* Two-toed: *Choloepus hoffmanni*
	Anteater	Giant anteater: *Myrmecophaga tridactyla*
Chiroptera	Bat	Little brown bat: *Myotis lucifugus* Fruit bat: *Pteropus vampyrus* Vampire bat: *Desmodus rotundus*
Eulipotyphla	Hedgehog	European hedgehog: *Erinaceus europeaus*
	Shrew	*Sorex araneus*

Table S2. Selection of papers for the review

	Reason for exclusion	No studies excluded	percentage
Animals	Duplicate records	1240	42.06%
	Reviews, editorial, conference paper	46	1.56%
	Studies unrelated to terrestrial mammals (MNPs studies in the atmosphere, snow, mountains, groundwater, soil, karst, sludge, compost, food, animal dung, as well as studies regarding aquatic species and birds)	669	22.69%
	Lab-based studies with a focus on developing methodology, or without real biological sampling, experimental models such as in-vitro, in-vivo model, or computational models.	965	32.85%
	Lack of quantitative data and studies whose analyses were restricted to feces of animals	18	0.61%
Human	Duplicate records	305	29.05%
	Reviews, editorial, conference paper	50	4.76%

	Studies unrelated to MNPs in the human body (MNPs studies in food, air, groundwater, sediments soil, animals and aquatic ecosystem-mollusks, mussels, fish, seal, oysters, and shrimps)	358	34.10%
	Development of identification techniques and lab-based studies of experimental models such as in-vitro, in-vivo, or computational models and other unrelated medical studies	292	27.81%
	Lack of quantitative data	16	1.52%

Table S3. Summary of microplastic presence and characteristics in various tissues of terrestrial mammals) as reported in selected studies

Tissue type.	Concentration	Size (µm)	Polymer type	Shape	Identification method	Country	Reference
Stomach Intestines Lungs	110 particles in stomach (35%) 138 particles in intestines (43%) 69 particles in lun (22%)	NR.	NR.	Fibres	Stereoscopic microscope	Brazil	Alencastre-Santos et al., 2024
Stomach Intestines Lungs	NR.	NR.	NR.	Fibres	Stereoscopic microscope	Brazil	Correia et al., 2024)
Liver meat tripe (Stomach lining)	Mean values in items/g Meat: 0.19 in cows and 0.11 in sheep liver: 0.14 in cows and 0.0 in sheep tripe: 0.15 in cows and 0.14 in sheep	25–5000 <25 (8.28%) 25-50(15.38%) 50-100(17.16%) 100-500(24.85%) 500-1000 (14.2%) 1000-5000(20.12%)	Cows: Nylon (98%) and LDPE (2%) Sheep: Nylon (42%), PS (18%) and LDPE (42%)	Fibres (86.9%) Fragments (11.8%) Film (1.18%)	Optical microscope Micro-Raman EDX incorporated into SEM	Iran	Bahrani et al., 2024
Sperm cells	17.5-60.8 particles/mL (equivalent to 0.0077-0.3022 µg/mL)	17 ± 27.9 in length, and 8.3 ± 9.8 in width	PP Cellulose PP PS ABS, Nylon PES	Irregularly shaped fragments	Confocal Raman microscope equipped with a spectrometer	Germany	Grechi et al., 2024

			PA PVC Silicon(IV) oxide Others (24 supposed)				
Lung tissues	Domestic pigs:180 particles/g Fetal pigs: 97 particles/g	20.34 µm - 916.36 µm in domestic pigs 20.34 µm - 501.49 µm in fetal pigs	Domestic pigs PA (46.11%) PP (21.11%) PE (17.22%) PVC (6.11%) PC (4.44%) PET (2.22%) Others (2.79%) Fetal pigs PC (32.99%) PP (15.46%) PVC (15.46%) PA (14.43%) PE(11.34%) PU (4.12%) Others (6.2%)	Fibres Fragments Irregular shapes	Polarised light, followed by identification with LDIR	China	H. Li et al., 2023
Lungs, Ileum Liver Kidney, Blood clots	22.9 MP/g only in blood cloth	1-100 µm (1, 10), 50.3% (10, 20), 33.4% (20, 50), 12.6% (50, 100), 3.7%	PP PET	Fibres (0.5%) fragments (6.3%) rounded particles (58.2%) spheres (35.0%)	Micro-Raman spectroscopy	Portugal	Prata et al., 2022
Testis	2.36µg/g-485.77 µg/g	NR.	PE (36.4%) PVC (21.1%) Nylon66 (11.0%) Nylon6 (8.8%) SBR (7.1%) PU (6.3%) PP (2.7%) ABS(2.1%) PMMA (2.1%) PET (1.5%) PC (0.8%) PS (02%)	NR.	Pyrolysis gas chromatography	USA	Hu et al., 2024
Hair and residual bone remains	1-5 MNPs per pellets	<500 to >5000	PET (41.2%) PAN (26.5%) PA (14.7%) PE (8.8%) PP (5.9%) PS (2.9%)	NR	Stereomicroscope followed by micro FTIR	Italy	Nessi et al., 2022

Testis, epididymis, seminal vessicle and prostate samples	Testis:139.9 mg/kg Epididymis: 226.2 mg/kg Semenm: 232.4 mg/kg Prostate: 207.4 mg/kg	NR	PA66, PVC (56.25%), PE, PS & PMMA	NR	Pyrolysis gas chromatography	China	W. Yang et al., 2024
Plasma and lymph nodes	Lymph nodes: 14.5 particles/g	>50	PE, PP, PET, PS, PA, PU (unremarkable)	NR+A9:H 1	LC-MS/MS	Austria	Hornek-Gausterer et al., 2021

Table S4. Overview of characteristics of MNPs in various tissues/cell lines and their potential effect on the human body

Cell type	Size of Mp	Concentration (MP/L)	Polymer type	Shape	Observed health impact	References
human ovarian granulosa cell line	15 nm - 25 nm	150 µg/ml PS-NPs	PS	spherical	No significant effects	Wang W et al., 2024
human M1 macrophages (blood cells)	NR	20 µg/ml	PP and PVC	NR	Oxidative stress, as evidenced by the increased lipid content. Changes in the chemical composition of cellular components but cell viability remained high	Zingaro F et al., 2023
human ovarian granulosa cells	15 nm - 38 nm	100 - 200 µg/ml	PS	Spherical	Induced cell apoptosis and abnormal morphology of KGN cells thereby decreasing female fertility.	Zeng L et al., 2023
human ovarian granulosa cell line	50 nm	50 - 200 µg/ml	PS	NR	Reduced cell viability Induced mitochondrial dysfunction Induced significant cell damage from oxidative stress and apoptosis	Huang J et al., 2023
lung (A549 and BEAS-2B), colon (Caco-2) and liver (HepG2)	2 µ m	(114, 1140, 11400, 56800, 568000 P/mL)	PS	NR	No significant effects on cell viability Long-term impact on mitochondrial functions could be more expected in colon cells as compared to lung and liver cells.	Peng M et al., 2023
Gastrointestinal tract	5mm & 240 ± 65 µm	NR	PLA	Pellets	Structural and functional alterations of the human gut bacteria	Jiménez-Arroyo C et al., 2023
Gut microbiota and intestinal barrier (Infant)	1- 10 µm	NR	PE	Beads	The decrease observed in beneficial gut bacteria and an increase in harmful bacteria.	Fournier E et al., 2023
Human colon cells (human intestinal	0.5 µm & 2 µm	3.6*10^7 particles/ml 2.32*10^6 particles/ml	PS	Beads	Induced oxidative stress, inducing decoupling of glycose and glutamine This causes metabolic adaptation to environmental stress conditions, thus posing	Bonanomi M et al., 2022

CCD-18Co cells)					as a cancer risk factor to human health	
human colonic epithelial cell CCD841CoN and small intestinal epithelial cell HIEC-6	0.1- 5 µm	(12.5, 25, 50, and 100 µg/mL)	PS	spherical	Low toxicity to oxidative stress level and mitochondrial membrane potential. Membrane damage caused by MP was greater than that caused by NP	Zhang Y et al., 2022
Human intestinal Caco-2 cells	300nm - 6 µm	20- 120 µg/mL	PS	spherical		Wang Q et al., 2020
Human colon adenocarcinoma Caco-2cells	0.1 & 5 µm	1 - 200 µg/mL	PS	spherical	Showed low toxicity on cell viability, oxidative stress, membrane integrity, and fluidity. However, the mitochondrial membrane potential was disrupted.	Wu B et al., 2019
Human trophoblast Swan 71 cells	50nm	0 - 200 µg/mL	PS	NR	Higher doses were related to recurrent miscarriages Increased oxidative stress, decreases mitochondrial membrane potential, and increased apoptosis in humans.	Wan S et al., 2024
Placenta cells	25, 50, 100 & 500 nm	(0, 20, 39, 78, 156, 313, 625, 1250, 2500 and 5000 µg/mL	PS	NR	Increased ROS leading to DNA damage inhibited protein kinase A (PKA) activity, indicating endocrine system disruption	Shen F et al., 2022
placental trophoblasts	100 nm	10, 50, & 100 µg/mL	PS	spherical	Directly invades the trophoblast, thus causing; decreased cell viability and cell cycle arrest. Affected gene expression patterns and can be associated with fetal losses in early pregnancy, preeclampsia, and other pregnancy complications.	Hu J et al., 2022
Placenta and intestinal cells	50 nm &500 nm	0.01- 100µg/mL	PS	spherical		Hesler M et al., 2019
Human kidney proximal tubular epithelial (HK-2)	20 nm & 50 nm	0, 50, &100 µg/mL	PS	NR	Induced cell death in a size-dose-dependent manner Induced apoptosis, ROS production, and structure changes of mitochondrial and endoplasmic reticulum	Zhu Z et al., 2023
human embryonic kidney 293T cells and human normal liver LO2 cells	20, 60, 100, 500, & 1000 nm	1, 5, 25, 75, and 125 µg/mL	PS	NR	Cell toxicity was induced by oxidative stress which damages the cell membrane, and mitochondria and reduces the production of ATP.	Li Y et al., 2023
human embryonic kidney 293 (HEK293) cells	3.54 ± 0.39 µm	3–300 ng/mL	PS	round	Induced cytotoxicity by inhibiting the production of antioxidant enzymes by oxidative stress It can induce apoptosis and autophagy. Can impair kidney barrier integrity and increase the risk of kidney injury.	Chen YC et al., 2022
human kidney	2 µm	0.025, 0.05, 0.1,	PS	NR	Mitochondrial dysfunction	Wang YL et al.,

proximal tubular epithelial cells (HK-2 cells)		0.2, 0.4, or 0.8μg/mL			ER stress, inflammation, and autophagy. Long-term exposure may be a risk factor for kidney health	2021
Human brain vascular pericytes	82 nm- 385 nm	50 μg/mL	PET	NR	Decreased mitochondrial respiratory functions	Gettings SM et al., 2024
human neural stem cells (NSCs)	30 nm	0.5, 2.5, and 10 μg/mL	PS	NR	Cell death by apoptosis and decreased cell proliferation	González-Caballero MC et al., 2024
Brain cortical organoids	100 nm	0.025, 0.05, and 0.1 mg/ml	PS	NR	Cellular dysfunction and structural impact Inhibited the expression of N-Cadherin which plays a key role in axonal extension and synaptic connections Affected critical cells reducing neural precursor and neuronal cells decreases expression of genes related to the WNT signaling pathway, potentially suppressing embryonic brain growth	Chen S et al., 2023
human peripheral lymphocytes	10 - 45 μm	25, 50, 100, 250, and 500 μg/mL	PE	NR	Increases genomic instability no significant signs of cytotoxicity	Çobanoğlu H et al., 2021
macrophages from THP-1 cell lines	0.5 - 3 μm	1.04,1.6,10, 37.5, 75, 375, 1500 μg/mL	PS	NR	Induce Nitric oxide formation and cytotoxic effects ROS production, indicating oxidative stress in macrophages exposed to PS MNBs.	Adler MY et al., 2024
lung epithelium	averagely: 130 nm	2.5, 10, and 20 μg/cm^2 for short term and just 2.5 μg/cm^2 for long term	PLA	Spherical	Presents significant genotoxic activity but not oxidative effects Induced overproduction of cellular proteins	García-Rodríguez A et al., 2024
lung cell	800nm	10, 25, 50, 100, 250, and 500 μg/mL	PS	NR	Affected cell viability, inducing oxidative stress, cellular senescence, and apoptosis.	Milillo C et al., 2024
Bronchial smooth muscle	25 /50 nm	10 mg/mL	PS	NR	Impaired bioenergetics and induced mitochondrial dysfunction	Winiarska E et al., 2024
5 human-derived cell lines were used for this study (Caco-2, A549, U937, THP-1, HaCaT, and Jurkat cells)	6 & 31.7 μm	1000 μg/mL.	PTFE	irregular	Induced oxidative stress by enhancing the production of Nitric oxide and ROS in human cell lines Enhanced inflammatory cytokine secretion at lung epithelial and macrophage cell lines Did not induce cytotoxicity	K C PB et al., 2023
Lung and intertracheal instillation	Averagely: 103nm	25–400 μg/ml	PS	NR	Only positively charges PS induced cytotoxicity and increased ROS autophagic cell death in bronchial epithelial cell	Jeon MS et al., 2023
alveolar basal epithelial cells (A549 cells)	2 μm & 80 nm	0, 5, 25, 100 μg/mL	PS	spherical	Cell viability and induction of the micronuclei were impacted	Shi X et al., 2022
human hepatic (L02)	80 nm	0, 0.006, 0.0125, 0.03125, 0.0625,	PS	NR	No cell death Caused mitochondrial damage by over-	Lin S et al., 2022

cells and lung (BEAS-2B) cells		0.125, or 0.25 mg/mL			production of ROS, alteration of the membrane, and suppression of mitochondrial respiration	
Human alveolar type II epithelial A549 cell line	20 & 50 nm	PS-NP20 + and PS-NP20 at 10, 20 and 40 µg/ml PS-NP50 at 40, 80 and 160 µg/ml	PS	NR	Caused mitochondrial dysfunction as demonstrated by membrane potential changes and impaired cellular energy metabolism. Activated ER stress as indicated by the up-regulated ER stress marker	Halimu G
Intestinal (Caco-2 cell line), lung (A549 cell line), HaCaT keratinocyte cell line, U937 macrophage cell line and THP-1 dendritic cell line, and Jurkat T cell line	30.5 and 6.2 µm	1 µg/mL to 1000 µg/mL	PE	NR	Cytotoxic at high conc Induced nitric oxide and generated reactive oxygen species in cell lines independently of size. Modulated proinflammatory cytokines production at keratinocyte and immune cell lines.	Gautam R et al., 2022
lung carcinoma cell A549 cells	122–221 nm & 142–296 nm	300 µg/mL and 30 µg/mL,	PET	Smooth and round	At low concentrations, low effect on viability meanwhile inhibitory effects on cell viability at high concentrations Increased oxidation stress which in turn decreased mitochondrion membrane potential	Zhang H et al., 2022
Lung epithelial cells	40 nm	0 to 40µg/cm2	PS	NR	Triggered oxidative stress and inflammatory response could induce lung epithelial apoptosis Damaged epithelial barrier and pulmonary function	Yang S et al., 2021
human alveolar A549 cells	1 & 10 µm	0.05 to 100µg/mL	PS	spherical	Significantly decreased the proliferation rate of human alveolar A549 cells Loss of cell-to-cell contact and increased cell motility population-level decrease in metabolic activity in cells exposed to PS-MNPs1	Goodman KE et al., 2021
lung epithelial cells	25 & 70 mn	PS-NP25 (0 - 5 µg/mL) PS-NP70 (0 - 100 µg/mL)	PS	NR	Significantly affected cell viability caused cell cycle S phase arrest activated inflammatory gene transcription Changed the expression of proteins associated with cell cycle and pro-apoptosis.	Xu M et al., 2019
lung epithelial cell line BEAS-2B	1.67 - 2.17µm	(1–1000µg/cm2)	PS	spherical	Cytotoxic and inflammatory effects in BEAS-2B cells by inducing reactive oxygen species formation Decreased transepithelial electrical resistance by depleting zonula occludens proteins thus increasing the risk for chronic obstructive pulmonary disease.	Dong CD et al., 2020
Human serum Albumin	80 nm	0 - 40 µg/mL	PS	spherical	Disrupted the conformation and function of HSA	Wang Y et al., 2024

(HSA)					Quenched the fluorescence of HSA by static binding modes.	
hESC-derived cardiomyocytes	28 nm	5 - 20 μg/mL	PS	spherical	Impeded cardiac differentiation as revealed by the low efficiency of differentiation, malformation, and weak contraction at both CM and CO levels. Mitochondrial oxidative stress, disturbing autophagy and inducing apoptosis in hESCs.	Li J et al., 2024
T-cells, DCs, and macrophages	50 - 1100 nm	1–100 μg/ml	PS, PMMA and amine-modified PS (PS-NH2)	NR	All three cells experienced cytotoxicity The immune checkpoint marker was affected.	Wolff CM et al., 2023
human neural stem cell line (hNS1)	30 nm	0.5, 2.5 and 10 μg/mL	PS	NR	Oxidative stress and DNA damage led to apoptosis and alterations in inflammatory response which consequently resulted in tissue damage and neurodevelopmental diseases.	Martin-Folgar R et al., 2024
The GI tract and the placental barrier	50 nm & 0.5 μm	0.01 - 100 μg/mL	PS	spherical	Particles were taken up and intracellular accumulated but did not cross intestinal and placental barriers. Weakly embryotoxic and genotoxic	Hesler M et al., 2019
human intestinal epithelial cell line Caco-2, HT29-MTX (representing goblet cells and Raji B-lymphocyte	1, 4& 10 μm	NR	PS	spherical	Particles did not interfere with the differentiation and activation of the human macrophage model.	Stock V et al., 2019