# Micro-Swarm Dump Report

dump_dir: dumps\Baseline-Paper_Run
prefix: baseline
steps: 10
normalization: global

## Summary over time
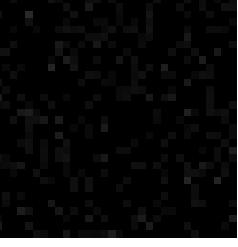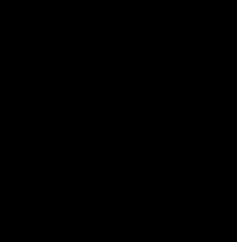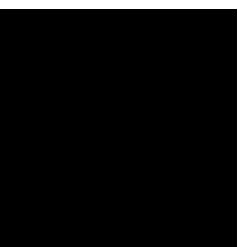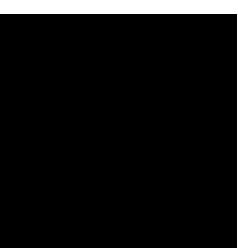
| Field | mean | nonzero_ratio | norm_entropy |
|---|---|---|---|
| resources | (0.0148 .. 0.1992) | (0.0197 .. 1.0000) | (0.0395 .. 0.7964) |
| phero_food | (0.0000 .. 0.0421) | (0.0000 .. 0.9998) | (0.0000 .. 0.7539) |
| phero_danger | (0.0000 .. 0.0003) | (0.0000 .. 0.0927) | (0.0000 .. 0.1138) |
| molecules | (0.0000 .. 0.0011) | (0.0000 .. 0.4025) | (0.0000 .. 0.3154) |
| mycel | (0.0000 .. 0.0831) | (0.0000 .. 1.0000) | (0.0000 .. 0.8772) |

## System over time
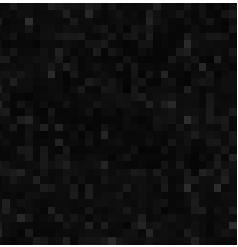
| Metric | Sparkline |
|---|---|
| dna_global_size | (0.0000 .. 0.0000) |
| dna_s0 | (0.0000 .. 256.0000) |
| dna_s1 | (0.0000 .. 256.0000) |
| dna_s2 | (0.0000 .. 256.0000) |
| dna_s3 | (0.0000 .. 256.0000) |
| energy_s0 | (0.3933 .. 0.9595) |
| energy_s1 | (0.3830 .. 0.9594) |
| energy_s2 | (0.4012 .. 0.9716) |
| energy_s3 | (0.3923 .. 0.9815) |
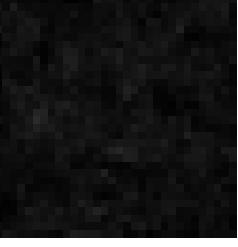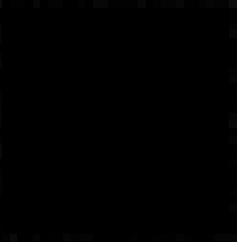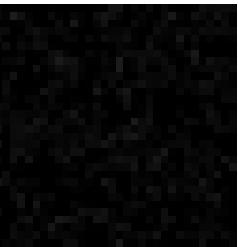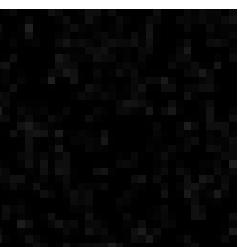
## Step 0
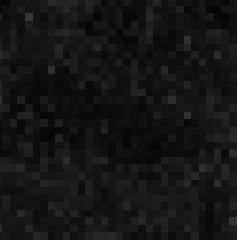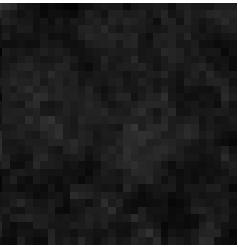
| Field | CSV | Stats | Preview |
|---|---|---|---|

| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000000_resources.csv | min=0.0000<br>max=1.0000<br>mean=0.0148<br>stddev=0.1065<br>nonzero_ratio=0.0197<br>p95=0.0000<br>entropy=0.1641<br>norm_entropy=0.0395 | |
| phero_food | baseline_step000000_phero_food.csv | min=0.0000<br>max=0.0000<br>mean=0.0000<br>stddev=0.0000<br>nonzero_ratio=0.0000<br>p95=0.0000<br>entropy=0.0000<br>norm_entropy=0.0000 | |
| phero_danger | baseline_step000000_phero_danger.csv | min=0.0000<br>max=0.0000<br>mean=0.0000<br>stddev=0.0000<br>nonzero_ratio=0.0000<br>p95=0.0000<br>entropy=0.0000<br>norm_entropy=0.0000 | |
| molecules | baseline_step000000_molecules.csv | min=0.0000<br>max=0.0000<br>mean=0.0000<br>stddev=0.0000<br>nonzero_ratio=0.0000<br>p95=0.0000<br>entropy=0.0000<br>norm_entropy=0.0000 | |
| mycel | baseline_step000000_mycel.csv | min=0.0000<br>max=0.0000<br>mean=0.0000<br>stddev=0.0000<br>nonzero_ratio=0.0000<br>p95=0.0000<br>entropy=0.0000<br>norm_entropy=0.0000 | |
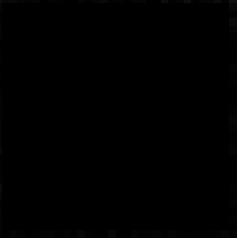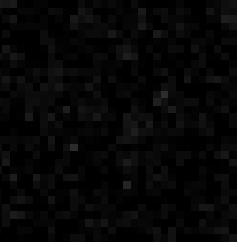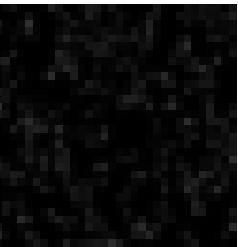
## Step 50

| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000050_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.0568<br>stddev=0.1017<br>nonzero_ratio=1.0000<br>p95=0.0750<br>entropy=1.6849<br>norm_entropy=0.4051 | |

| Field | CSV | Stats | Preview |
|---|---|---|---|
| phero_food | baseline_step000050_phero_food.csv | min=0.0000<br>max=0.1190<br>mean=0.0162<br>stddev=0.0101<br>nonzero_ratio=0.9838<br>p95=0.0350<br>entropy=2.9432<br>norm_entropy=0.7077 |  |
| phero_danger | baseline_step000050_phero_danger.csv | min=0.0000<br>max=0.0420<br>mean=0.0001<br>stddev=0.0012<br>nonzero_ratio=0.0368<br>p95=0.0000<br>entropy=0.2318<br>norm_entropy=0.0557 |  |
| molecules | baseline_step000050_molecules.csv | min=0.0000<br>max=0.0200<br>mean=0.0008<br>stddev=0.0019<br>nonzero_ratio=0.3506<br>p95=0.0040<br>entropy=1.1504<br>norm_entropy=0.2766 |  |
| mycel | baseline_step000050_mycel.csv | min=0.0000<br>max=0.1010<br>mean=0.0043<br>stddev=0.0094<br>nonzero_ratio=0.5417<br>p95=0.0210<br>entropy=1.6884<br>norm_entropy=0.4060 |  |
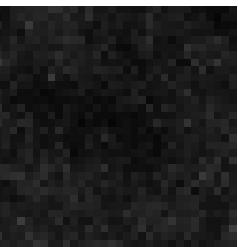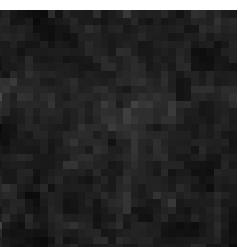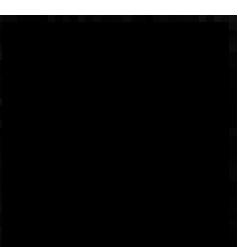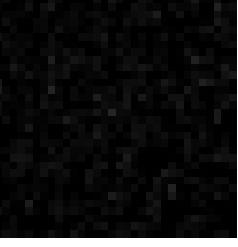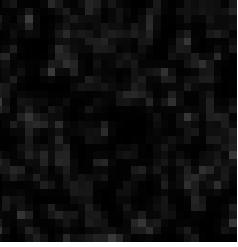
## Step 100

| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000100_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.0815<br>stddev=0.1020<br>nonzero_ratio=1.0000<br>p95=0.1500<br>entropy=2.2846<br>norm_entropy=0.5493 |  |
| phero_food | baseline_step000100_phero_food.csv | min=0.0000<br>max=0.1350<br>mean=0.0286<br>stddev=0.0129<br>nonzero_ratio=0.9933<br>p95=0.0510<br>entropy=3.1356<br>norm_entropy=0.7539 |  |

| Field | CSV | Stats | Preview |
|---|---|---|---|
| phero_danger | baseline_step000100_phero_danger.csv | min=0.0000<br>max=0.0550<br>mean=0.0002<br>stddev=0.0013<br>nonzero_ratio=0.0601<br>p95=0.0010<br>entropy=0.3351<br>norm_entropy=0.0806 |  |
| molecules | baseline_step000100_molecules.csv | min=0.0000<br>max=0.0250<br>mean=0.0009<br>stddev=0.0021<br>nonzero_ratio=0.3627<br>p95=0.0050<br>entropy=1.2139<br>norm_entropy=0.2919 |  |
| mycel | baseline_step000100_mycel.csv | min=0.0000<br>max=0.1170<br>mean=0.0079<br>stddev=0.0124<br>nonzero_ratio=0.7809<br>p95=0.0310<br>entropy=2.3596<br>norm_entropy=0.5674 |  |
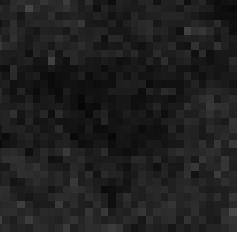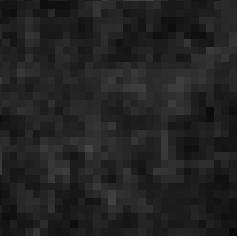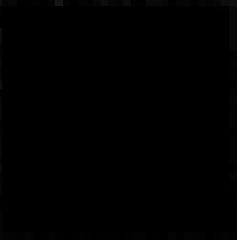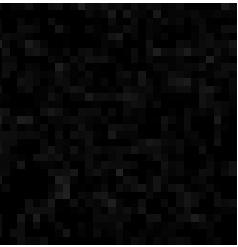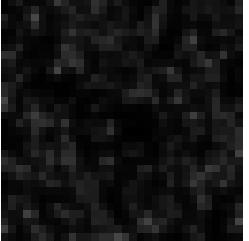
# Step 150

| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000150_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.1020<br>stddev=0.1043<br>nonzero_ratio=1.0000<br>p95=0.1850<br>entropy=2.6036<br>norm_entropy=0.6260 |  |
| phero_food | baseline_step000150_phero_food.csv | min=0.0000<br>max=0.2400<br>mean=0.0348<br>stddev=0.0140<br>nonzero_ratio=0.9984<br>p95=0.0600<br>entropy=2.6458<br>norm_entropy=0.6362 |  |
| phero_danger | baseline_step000150_phero_danger.csv | min=0.0000<br>max=0.0540<br>mean=0.0002<br>stddev=0.0015<br>nonzero_ratio=0.0735<br>p95=0.0010<br>entropy=0.3911<br>norm_entropy=0.0940 |  |

| molecules | baseline_step000150_molecules.csv | min=0.0000<br>max=0.0260<br>mean=0.0010<br>stddev=0.0022<br>nonzero_ratio=0.3832<br>p95=0.0050<br>entropy=1.2521<br>norm_entropy=0.3011 |  |
| mycel | baseline_step000150_mycel.csv | min=0.0000<br>max=0.1270<br>mean=0.0114<br>stddev=0.0142<br>nonzero_ratio=0.9327<br>p95=0.0380<br>entropy=2.7628<br>norm_entropy=0.6643 |  |
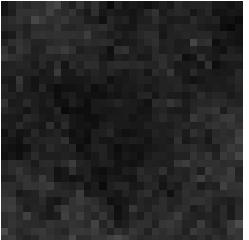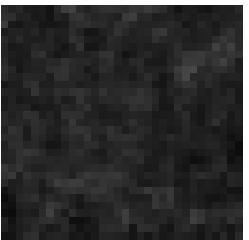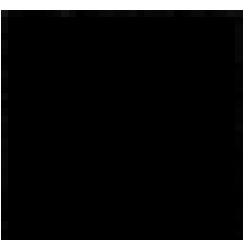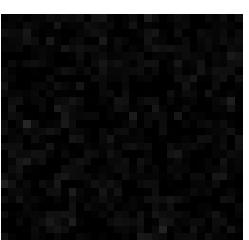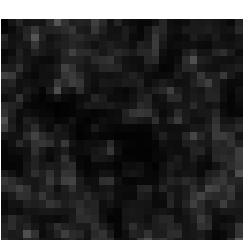
## Step 200
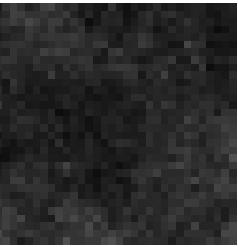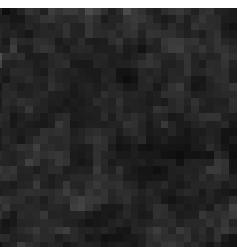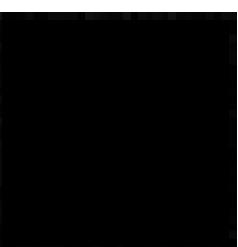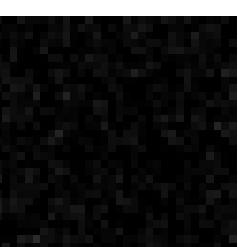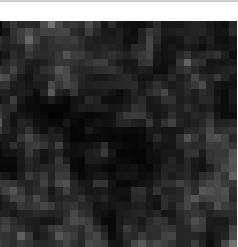
| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000200_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.1206<br>stddev=0.1078<br>nonzero_ratio=1.0000<br>p95=0.2360<br>entropy=2.7976<br>norm_entropy=0.6727 |  |
| phero_food | baseline_step000200_phero_food.csv | min=0.0000<br>max=0.1600<br>mean=0.0379<br>stddev=0.0148<br>nonzero_ratio=0.9992<br>p95=0.0650<br>entropy=3.0922<br>norm_entropy=0.7435 |  |
| phero_danger | baseline_step000200_phero_danger.csv | min=0.0000<br>max=0.1120<br>mean=0.0002<br>stddev=0.0016<br>nonzero_ratio=0.0754<br>p95=0.0010<br>entropy=0.2017<br>norm_entropy=0.0485 |  |
| molecules | baseline_step000200_molecules.csv | min=0.0000<br>max=0.0300<br>mean=0.0010<br>stddev=0.0022<br>nonzero_ratio=0.3828<br>p95=0.0060<br>entropy=1.2605<br>norm_entropy=0.3031 |  |

| Field | CSV | Stats | Preview |
|---|---|---|---|
| mycel | baseline_step000200_mycel.csv | min=0.0000<br>max=0.1370<br>mean=0.0167<br>stddev=0.0157<br>nonzero_ratio=0.9958<br>p95=0.0470<br>entropy=3.0261<br>norm_entropy=0.7276 |  |
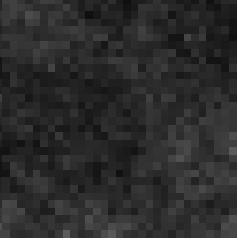
## Step 250
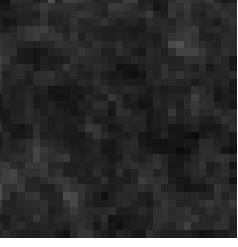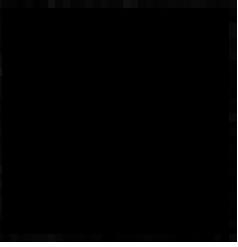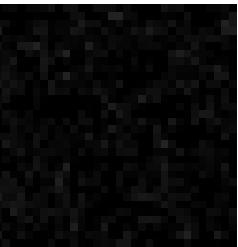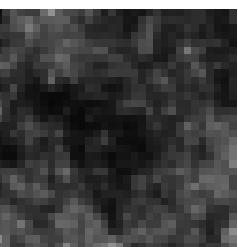
| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000250_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.1379<br>stddev=0.1124<br>nonzero_ratio=1.0000<br>p95=0.2770<br>entropy=2.9597<br>norm_entropy=0.7117 |  |
| phero_food | baseline_step000250_phero_food.csv | min=0.0000<br>max=0.1910<br>mean=0.0397<br>stddev=0.0146<br>nonzero_ratio=0.9995<br>p95=0.0670<br>entropy=2.9314<br>norm_entropy=0.7048 |  |
| phero_danger | baseline_step000250_phero_danger.csv | min=0.0000<br>max=0.0410<br>mean=0.0002<br>stddev=0.0015<br>nonzero_ratio=0.0734<br>p95=0.0010<br>entropy=0.3907<br>norm_entropy=0.0940 |  |
| molecules | baseline_step000250_molecules.csv | min=0.0000<br>max=0.0220<br>mean=0.0010<br>stddev=0.0023<br>nonzero_ratio=0.3983<br>p95=0.0060<br>entropy=1.2884<br>norm_entropy=0.3098 |  |
| mycel | baseline_step000250_mycel.csv | min=0.0010<br>max=0.1470<br>mean=0.0249<br>stddev=0.0176<br>nonzero_ratio=1.0000<br>p95=0.0580<br>entropy=3.2340<br>norm_entropy=0.7776 |  |

## Step 300
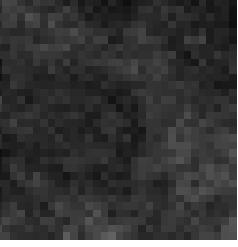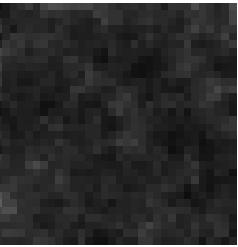
| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000300_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.1540<br>stddev=0.1156<br>nonzero_ratio=1.0000<br>p95=0.3100<br>entropy=3.0679<br>norm_entropy=0.7377 | |
| phero_food | baseline_step000300_phero_food.csv | min=0.0000<br>max=0.1860<br>mean=0.0408<br>stddev=0.0152<br>nonzero_ratio=0.9995<br>p95=0.0680<br>entropy=2.9818<br>norm_entropy=0.7170 | |
| phero_danger | baseline_step000300_phero_danger.csv | min=0.0000<br>max=0.0600<br>mean=0.0003<br>stddev=0.0016<br>nonzero_ratio=0.0774<br>p95=0.0010<br>entropy=0.4136<br>norm_entropy=0.0994 | |
| molecules | baseline_step000300_molecules.csv | min=0.0000<br>max=0.0270<br>mean=0.0011<br>stddev=0.0023<br>nonzero_ratio=0.3947<br>p95=0.0060<br>entropy=1.2959<br>norm_entropy=0.3116 | |
| mycel | baseline_step000300_mycel.csv | min=0.0020<br>max=0.1630<br>mean=0.0362<br>stddev=0.0209<br>nonzero_ratio=1.0000<br>p95=0.0740<br>entropy=3.4053<br>norm_entropy=0.8188 | |
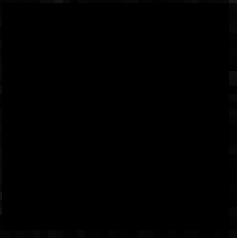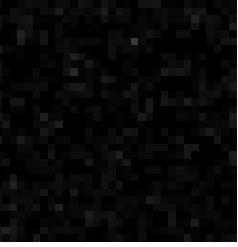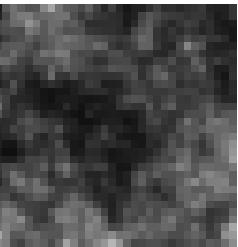
## Step 350

| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000350_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.1695<br>stddev=0.1189<br>nonzero_ratio=1.0000<br>p95=0.3350<br>entropy=3.1656<br>norm_entropy=0.7612 | |

| phero_food | baseline_step000350_phero_food.csv | min=0.0000<br>max=0.2810<br>mean=0.0414<br>stddev=0.0158<br>nonzero_ratio=0.9997<br>p95=0.0710<br>entropy=2.5975<br>norm_entropy=0.6246 |  |
|---|---|---|---|
| phero_danger | baseline_step000350_phero_danger.csv | min=0.0000<br>max=0.0550<br>mean=0.0003<br>stddev=0.0016<br>nonzero_ratio=0.0871<br>p95=0.0010<br>entropy=0.4514<br>norm_entropy=0.1085 |  |
| molecules | baseline_step000350_molecules.csv | min=0.0000<br>max=0.0230<br>mean=0.0011<br>stddev=0.0023<br>nonzero_ratio=0.4025<br>p95=0.0060<br>entropy=1.3044<br>norm_entropy=0.3136 |  |
| mycel | baseline_step000350_mycel.csv | min=0.0040<br>max=0.1880<br>mean=0.0498<br>stddev=0.0253<br>nonzero_ratio=1.0000<br>p95=0.0950<br>entropy=3.5115<br>norm_entropy=0.8443 |  |
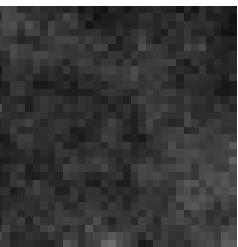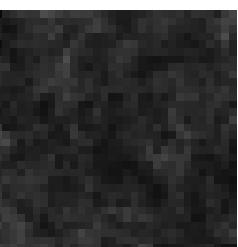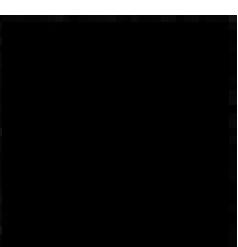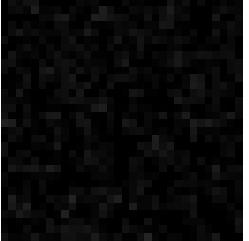
## Step 400

| Field | CSV | Stats | Preview |
|---|---|---|---|
| resources | baseline_step000400_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.1846<br>stddev=0.1233<br>nonzero_ratio=1.0000<br>p95=0.3600<br>entropy=3.2413<br>norm_entropy=0.7794 |  |
| phero_food | baseline_step000400_phero_food.csv | min=0.0000<br>max=0.2070<br>mean=0.0418<br>stddev=0.0159<br>nonzero_ratio=0.9998<br>p95=0.0710<br>entropy=2.8929<br>norm_entropy=0.6956 |  |

| phero_danger | baseline_step000400_phero_danger.csv | min=0.0000<br>max=0.0910<br>mean=0.0003<br>stddev=0.0018<br>nonzero_ratio=0.0887<br>p95=0.0010<br>entropy=0.2626<br>norm_entropy=0.0631 |  |
| molecules | baseline_step000400_molecules.csv | min=0.0000<br>max=0.0240<br>mean=0.0011<br>stddev=0.0024<br>nonzero_ratio=0.3920<br>p95=0.0060<br>entropy=1.2963<br>norm_entropy=0.3117 |  |
| mycel | baseline_step000400_mycel.csv | min=0.0110<br>max=0.2150<br>mean=0.0656<br>stddev=0.0300<br>nonzero_ratio=1.0000<br>p95=0.1190<br>entropy=3.5907<br>norm_entropy=0.8634 |  |

## Step 450

| Field | CSV | Stats | Preview |
| --- | --- | --- | --- |
| resources | baseline_step000450_resources.csv | min=0.0020<br>max=1.0000<br>mean=0.1992<br>stddev=0.1268<br>nonzero_ratio=1.0000<br>p95=0.3950<br>entropy=3.3119<br>norm_entropy=0.7964 |  |
| phero_food | baseline_step000450_phero_food.csv | min=0.0000<br>max=0.2360<br>mean=0.0421<br>stddev=0.0160<br>nonzero_ratio=0.9997<br>p95=0.0720<br>entropy=2.7824<br>norm_entropy=0.6690 |  |
| phero_danger | baseline_step000450_phero_danger.csv | min=0.0000<br>max=0.0420<br>mean=0.0003<br>stddev=0.0016<br>nonzero_ratio=0.0927<br>p95=0.0010<br>entropy=0.4734<br>norm_entropy=0.1138 |  |

| molecules | [baseline_step000450_molecules.csv](baseline_step000450_molecules.csv) | min=0.0000<br>max=0.0400<br>mean=0.0011<br>stddev=0.0023<br>nonzero_ratio=0.4005<br>p95=0.0060<br>entropy=1.3119<br>norm_entropy=0.3154 |  |
|---|---|---|---|
| mycel | [baseline_step000450_mycel.csv](baseline_step000450_mycel.csv) | min=0.0190<br>max=0.2420<br>mean=0.0831<br>stddev=0.0348<br>nonzero_ratio=1.0000<br>p95=0.1460<br>entropy=3.6483<br>norm_entropy=0.8772 |  |