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1 C:\Users\w-mv\.conda\envs\spatialdata\python.exe C:\
  Users\w-mv\AppData\Roaming\JetBrains\PyCharm2023.3\
  scratches\issue_192.py
2 C:\Users\w-mv\.conda\envs\spatialdata\lib\site-
  packages\anndata\_core\anndata.py:1818: UserWarning:
  Observation names are not unique. To make them unique
  , call `.obs_names_make_unique`.
3     utils.warn_names_duplicates("obs")
4 C:\Users\w-mv\AppData\Roaming\JetBrains\PyCharm2023.3
  \scratches\issue_192.py:3: DeprecationWarning: Table
  group found in zarr store at location C:\Users\w-mv\
  PycharmProjects\spatialdata-notebooks\notebooks\
  examples\visium_brain.zarr. Please update the zarr
  store to use tables instead.
5     sdata = spatialdata.read_zarr("C:\\Users\\w-mv\\
  PycharmProjects\\spatialdata-notebooks\\notebooks\\
  examples\\visium_brain.zarr")
6 C:\Users\w-mv\.conda\envs\spatialdata\lib\site-
  packages\anndata\_core\anndata.py:1818: UserWarning:
  Observation names are not unique. To make them unique
  , call `.obs_names_make_unique`.
7     utils.warn_names_duplicates("obs")
8 C:\Users\w-mv\Documents\Phd_project\sdata\src\
  spatialdata\_core\query\relational_query.py:396:
  FutureWarning: The default of observed=False is
  deprecated and will be changed to True in a future
  version of pandas. Pass observed=False to retain
  current behavior or observed=True to adopt the future
  default and silence this warning.!
9 -----
  -----
10 InvalidIndexError                                Traceback (
  most recent call last)
11 File ~\Documents\Phd_project\napari-spatialdata\src\
  napari_spatialdata\sdata_widgets.py:61, in
  SdataWidget.__init__.<locals>.<lambda>(item=<PyQt5.
  QtWidgets.QListWidgetItem object>)
12     59 self.layout().addWidget(QLabel("Elements:"))
13     60 self.layout().addWidget(self.elements_widget)
14 ---> 61 self.elements_widget.itemDoubleClicked.
  connect(lambda item: self._onClick(item.text()))

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15         self.elements_widget = <napari_spatialdata.
        _sdata_widgets.ElementWidget object at
        0x000001D962350CA0>
16         self = <napari_spatialdata._sdata_widgets.
        SdataWidget object at 0x000001D962350A60>
17         item = <PyQt5.QtWidgets.QListWidgetItem
        object at 0x000001D959DEF520>
18         62 self.coordinate_system_widget.
        currentItemChanged.connect(
19         63     lambda item: self.elements_widget.
        _onItemClick(item.text())
20         64 )
21         65 self.coordinate_system_widget.
        currentItemChanged.connect(
22         66     lambda item: self.
        coordinate_system_widget._select_coord_sys(item.text
        ())
23         67 )
24
25 File ~\Documents\Phd_project\napari-spatialdata\src\
        napari_spatialdata\_sdata_widgets.py:91, in
        SdataWidget._onClick(self=<napari_spatialdata.
        _sdata_widgets.SdataWidget object>, text='ST8059050')
26         89     self.viewer_model.add_sdata_points(sdata
        , text, selected_cs, multi)
27         90 elif self.elements_widget._elements[text]["
        element_type"] == "shapes":
28 ---> 91     self._add_shapes(sdata, text, selected_cs
        , multi)
29         selected_cs = 'ST8059050'
30         self = <napari_spatialdata._sdata_widgets.
        SdataWidget object at 0x000001D962350A60>
31         sdata = SpatialData object with:
32 |   Images
33 |   |   |   'ST8059048_hires_image': SpatialImage[cyx
34 |   |   |   (3, 2000, 1969)
35 |   |   |   'ST8059048_lowres_image': SpatialImage[cyx
36 |   |   |   (3, 600, 591)
37 |   |   |   'ST8059050_hires_image': SpatialImage[cyx
38 |   |   |   (3, 2000, 1968)
39 |   |   |   'ST8059050_image': SpatialImage[cyx] (3,

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60     129 if type(sdata.shapes[original_name].iloc[0].
        geometry) == shapely.geometry.point.Point:
61 --> 130     self.viewer_model.add_sdata_circles(
        sdata, key, selected_cs, multi)
62         multi = False
63         key = 'ST8059050'
64         sdata = SpatialData object with:
65 |— Images
66 |   |— 'ST8059048_hires_image': SpatialImage[cyx
67 |   |   (3, 2000, 1969)
68 |   |— 'ST8059048_lowres_image': SpatialImage[cyx
69 |   |   (3, 600, 591)
70 |   |— 'ST8059050_hires_image': SpatialImage[cyx
71 |   |   (3, 2000, 1968)
72 |   |— 'ST8059050_image': SpatialImage[cyx] (3,
73 |   |   2000, 1968)
74 |   |— 'ST8059050_lowres_image': SpatialImage[cyx
75 |   |   (3, 600, 590)
76 |   |— 'ST8059052_image': SpatialImage[cyx] (3,
77 |   |   2000, 1950)
78 |— Shapes
79 |   |— 'ST8059048': GeoDataFrame shape: (2987, 2
80 |   |   ) (2D shapes)
81 |   |— 'ST8059050': GeoDataFrame shape: (3497, 2
82 |   |   ) (2D shapes)
83 |   |— 'ST8059050_shapes': GeoDataFrame shape: (
84 |   |   3497, 2) (2D shapes)
85 |   |— 'ST8059052_shapes': GeoDataFrame shape: (
86 |   |   2576, 2) (2D shapes)
87 |— Tables
88 |   |— 'table': AnnData (6484, 31053)
89 with coordinate systems:
90 ▶ 'ST8059048', with elements:
91     ST8059048_hires_image (Images), ST8059048 (
92     Shapes)
93 ▶ 'ST8059050', with elements:
94     ST8059050_hires_image (Images),
95     ST8059050_image (Images), ST8059050 (Shapes),
96     ST8059050_shapes (Shapes)
97 ▶ 'ST8059052', with elements:
98     ST8059052_image (Images), ST8059052_shapes (

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85 Shapes)
86         selected_cs = 'ST8059050'
87         self.viewer_model = <napari_spatialdata.
_viewer.SpatialDataViewer object at
0x0000001D962350AF0>
88         self = <napari_spatialdata._sdata_widgets.
SdataWidget object at 0x0000001D962350A60>
89         131 elif (type(sdata.shapes[original_name].iloc[
0].geometry) == shapely.geometry.polygon.Polygon) or
(
90         132         type(sdata.shapes[original_name].iloc[0
].geometry) == shapely.geometry.multipolygon.
MultiPolygon
91         133 ):
92         134         self.viewer_model.add_sdata_shapes(sdata
, key, selected_cs, multi)
93
94 File ~\Documents\Phd_project\napari-spatialdata\src\
napari_spatialdata\_viewer.py:357, in
SpatialDataViewer.add_sdata_circles(self=<
napari_spatialdata._viewer.SpatialDataViewer object
>, sdata=SpatialData object with:
95 |— Images
96 |   |— 'S...8059052_image (Images),
ST8059052_shapes (Shapes), key='ST8059050',
selected_cs='ST8059050', multi=False)
97         354 yx = np.fliplr(xy)
98         355 radii = df.radius.to_numpy()
99 --> 357 adata, table_name, table_names = self.
_get_table_data(sdata, original_name)
100         original_name = 'ST8059050'
101         sdata = SpatialData object with:
102 |— Images
103 |   |— 'ST8059048_hires_image': SpatialImage[cyx
] (3, 2000, 1969)
104 |   |— 'ST8059048_lowres_image': SpatialImage[cyx
] (3, 600, 591)
105 |   |— 'ST8059050_hires_image': SpatialImage[cyx
] (3, 2000, 1968)
106 |   |— 'ST8059050_image': SpatialImage[cyx] (3,
2000, 1968)

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107 |         |— 'ST8059050_lowres_image': SpatialImage[cyx
    |     ] (3, 600, 590)
108 |         |— 'ST8059052_image': SpatialImage[cyx] (3,
    |     2000, 1950)
109 |         |— Shapes
110 |         |— 'ST8059048': GeoDataFrame shape: (2987, 2
    |     ) (2D shapes)
111 |         |— 'ST8059050': GeoDataFrame shape: (3497, 2
    |     ) (2D shapes)
112 |         |— 'ST8059050_shapes': GeoDataFrame shape: (
    |     3497, 2) (2D shapes)
113 |         |— 'ST8059052_shapes': GeoDataFrame shape: (
    |     2576, 2) (2D shapes)
114 |         |— Tables
115 |         |— 'table': AnnData (6484, 31053)
116 with coordinate systems:
117 ▶ 'ST8059048', with elements:
118     ST8059048_hires_image (Images), ST8059048 (
    Shapes)
119 ▶ 'ST8059050', with elements:
120     ST8059050_hires_image (Images),
    ST8059050_image (Images), ST8059050 (Shapes),
    ST8059050_shapes (Shapes)
121 ▶ 'ST8059052', with elements:
122     ST8059052_image (Images), ST8059052_shapes (
    Shapes)
123     self = <napari_spatialdata._viewer.
    SpatialDataViewer object at 0x000001D962350AF0>
124     358 metadata = {
125     359         "sdata": sdata,
126     360         "adata": adata,
127     (... )
128     371     },
129     372 }
130     374 CIRCLES_AS_POINTS = True
131
132 File ~\Documents\Phd_project\napari-spatialdata\src\
    napari_spatialdata\_viewer.py:292, in
    SpatialDataViewer._get_table_data(self=<
    napari_spatialdata._viewer.SpatialDataViewer object
    >, sdata=SpatialData object with:

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133 |— Images
134 |   |— 'S...8059052_image (Images),
      ST8059052_shapes (Shapes), element_name='ST8059050')
135 |     290 table_names = list(_get_element_annotators(
      sdata, element_name))
136 |     291 table_name = table_names[0] if len(
      table_names) > 0 else None
137 --> 292 adata = _get_init_metadata_adata(sdata,
      table_name, element_name)
138 |     table_name = 'table'
139 |     sdata = SpatialData object with:
140 |— Images
141 |   |— 'ST8059048_hires_image': SpatialImage[cyx
      ] (3, 2000, 1969)
142 |   |— 'ST8059048_lowres_image': SpatialImage[cyx
      ] (3, 600, 591)
143 |   |— 'ST8059050_hires_image': SpatialImage[cyx
      ] (3, 2000, 1968)
144 |   |— 'ST8059050_image': SpatialImage[cyx] (3,
      2000, 1968)
145 |   |— 'ST8059050_lowres_image': SpatialImage[cyx
      ] (3, 600, 590)
146 |   |— 'ST8059052_image': SpatialImage[cyx] (3,
      2000, 1950)
147 |— Shapes
148 |   |— 'ST8059048': GeoDataFrame shape: (2987, 2
      ) (2D shapes)
149 |   |— 'ST8059050': GeoDataFrame shape: (3497, 2
      ) (2D shapes)
150 |   |— 'ST8059050_shapes': GeoDataFrame shape: (
      3497, 2) (2D shapes)
151 |   |— 'ST8059052_shapes': GeoDataFrame shape: (
      2576, 2) (2D shapes)
152 |— Tables
153 |   |— 'table': AnnData (6484, 31053)
154 with coordinate systems:
155 ▶ 'ST8059048', with elements:
156 |     ST8059048_hires_image (Images), ST8059048 (
      Shapes)
157 ▶ 'ST8059050', with elements:
158 |     ST8059050_hires_image (Images),

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158 ST8059050_image (Images), ST8059050 (Shapes),
    ST8059050_shapes (Shapes)
159 ▶ 'ST8059052', with elements:
160     ST8059052_image (Images), ST8059052_shapes (
    Shapes)
161     element_name = 'ST8059050'
162     293 return adata, table_name, table_names
163
164 File ~\Documents\Phd_project\napari-spatialdata\src\
    napari_spatialdata\utils\_utils.py:386, in
    _get_init_metadata_adata(sdata=SpatialData object
    with:
165 |— Images
166 |   |— 'S...8059052_image (Images),
    ST8059052_shapes (Shapes), table_name='table',
    element_name='ST8059050')
167     384 if not table_name:
168     385     return None
169 --> 386 _, adata = join_spatialelement_table(
170     table_name = 'table'
171     sdata = SpatialData object with:
172 |— Images
173 |   |— 'ST8059048_hires_image': SpatialImage[cyx
    ] (3, 2000, 1969)
174 |   |— 'ST8059048_lowres_image': SpatialImage[cyx
    ] (3, 600, 591)
175 |   |— 'ST8059050_hires_image': SpatialImage[cyx
    ] (3, 2000, 1968)
176 |   |— 'ST8059050_image': SpatialImage[cyx] (3,
    2000, 1968)
177 |   |— 'ST8059050_lowres_image': SpatialImage[cyx
    ] (3, 600, 590)
178 |   |— 'ST8059052_image': SpatialImage[cyx] (3,
    2000, 1950)
179 |— Shapes
180 |   |— 'ST8059048': GeoDataFrame shape: (2987, 2
    ) (2D shapes)
181 |   |— 'ST8059050': GeoDataFrame shape: (3497, 2
    ) (2D shapes)
182 |   |— 'ST8059050_shapes': GeoDataFrame shape: (
    3497, 2) (2D shapes)

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183 |         └─ 'ST8059052_shapes': GeoDataFrame shape: (
      2576, 2) (2D shapes)
184 | └─ Tables
185 |     └─ 'table': AnnData (6484, 31053)
186 with coordinate systems:
187 ▶ 'ST8059048', with elements:
188     ST8059048_hires_image (Images), ST8059048 (
      Shapes)
189 ▶ 'ST8059050', with elements:
190     ST8059050_hires_image (Images),
      ST8059050_image (Images), ST8059050 (Shapes),
      ST8059050_shapes (Shapes)
191 ▶ 'ST8059052', with elements:
192     ST8059052_image (Images), ST8059052_shapes (
      Shapes)
193     element_name = 'ST8059050'
194     387     sdata=sdata, spatial_element_names=
      element_name, table_name=table_name, how="left",
      match_rows="left"
195     388 )
196     390 if adata.shape[0] == 0:
197     391     return None
198
199 File ~\Documents\Phd_project\sdata\src\spatialdata\
      _core\query\relational_query.py:602, in
      join_spatialelement_table(sdata=SpatialData object
      with:
200 | └─ Images
201 |     └─ 'S...8059052_image (Images),
      ST8059052_shapes (Shapes), spatial_element_names=['
      ST8059050'], spatial_elements=[None], table_name='
      table', table=AnnData object with n_obs × n_vars =
      6484 × 3105...spatial', 'spatialdata_attrs'
202     obsm: 'spatial', how='left', match_rows='left')
203     599     for name, element in getattr(
      derived_sdata, element_type).items():
204     600         elements_dict[element_type][name
      ] = element
205 --> 602 elements_dict_joined, table = _call_join(
      elements_dict, table, how, match_rows)
206     elements_dict = defaultdict(<function

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206 _create_sdata_elements_dict_for_join.<locals>.<
    lambda> at 0x000001D959DEF5B0>, {'shapes':
    defaultdict(<class 'dict'>, {'ST8059050
        ':
            geometry      radius
207 0      POINT (12767.000 10830.000)  71.202315
208 1      POINT (6311.000 1866.000)   71.202315
209 2      POINT (3674.000 12538.000)  71.202315
210 3      POINT (11896.000 3967.000)   71.202315
211 4      POINT (2580.000 9487.000)    71.202315
212 ...
213 3492   POINT (10031.000 7206.000)   71.202315
214 3493   POINT (6193.000 12349.000)   71.202315
215 3494   POINT (4878.000 12730.000)   71.202315
216 3495   POINT (4552.000 9870.000)    71.202315
217 3496   POINT (7187.000 2629.000)    71.202315
218
219 [3497 rows x 2 columns]}))})
220         table = AnnData object with n_obs x n_vars
           = 6484 x 31053
221         obs: 'in_tissue', 'array_row', 'array_col', '
           spot_id', 'region'
222         uns: 'spatial', 'spatialdata_attrs'
223         obsm: 'spatial'
224         how = 'left'
225         match_rows = 'left'
226         603 return elements_dict_joined, table
227
228 File ~\Documents\Phd_project\sdata\src\spatialdata\
           _core\query\relational_query.py:619, in _call_join(
           elements_dict=defaultdict(<function
           _create_sdata_elements_dic...2629.000) 71.202315
229
230 [3497 rows x 2 columns]}))}), table=AnnData object
           with n_obs x n_vars = 6484 x 3105...spatial', '
           spatialdata_attrs'
231         obsm: 'spatial', how='left', match_rows='left')
232         615         raise TypeError(
233         616             f" `{match_rows}` is an invalid
           argument for `match_rows`. Can be either `no`, ``
           left`` or ``right``"
234         617         )

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235     618 if how in JoinTypes.__dict__["_member_names_
      "]:
236 --> 619     elements_dict, table = JoinTypes[how](
      elements_dict, table, match_rows)
237     elements_dict = defaultdict(<function
      _create_sdata_elements_dict_for_join.<locals>.<
      lambda> at 0x000001D959DEF5B0>, {'shapes':
      defaultdict(<class 'dict'>, {'ST8059050
      ':
          geometry      radius
238 0     POINT (12767.000 10830.000)  71.202315
239 1     POINT (6311.000 1866.000)   71.202315
240 2     POINT (3674.000 12538.000)  71.202315
241 3     POINT (11896.000 3967.000)  71.202315
242 4     POINT (2580.000 9487.000)   71.202315
243 ...
244 3492  POINT (10031.000 7206.000)   71.202315
245 3493  POINT (6193.000 12349.000)  71.202315
246 3494  POINT (4878.000 12730.000)  71.202315
247 3495  POINT (4552.000 9870.000)   71.202315
248 3496  POINT (7187.000 2629.000)   71.202315
249
250 [3497 rows x 2 columns]]})})
251     elements_dict, table = (defaultdict(<
      function _create_sdata_elements_dict_for_join.<
      locals>.<lambda> at 0x000001D959DEF5B0>, {'shapes':
      defaultdict(<class 'dict'>, {'ST8059050
      ':
          geometry      radius
252 0     POINT (12767.000 10830.000)  71.202315
253 1     POINT (6311.000 1866.000)   71.202315
254 2     POINT (3674.000 12538.000)  71.202315
255 3     POINT (11896.000 3967.000)  71.202315
256 4     POINT (2580.000 9487.000)   71.202315
257 ...
258 3492  POINT (10031.000 7206.000)   71.202315
259 3493  POINT (6193.000 12349.000)  71.202315
260 3494  POINT (4878.000 12730.000)  71.202315
261 3495  POINT (4552.000 9870.000)   71.202315
262 3496  POINT (7187.000 2629.000)   71.202315
263
264 [3497 rows x 2 columns]]})}), AnnData object with
      n_obs × n_vars = 6484 × 31053

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265     obs: 'in_tissue', 'array_row', 'array_col', '
      spot_id', 'region'
266     uns: 'spatial', 'spatialdata_attrs'
267     obsm: 'spatial')
268         match_rows = 'left'
269         how = 'left'
270         table = AnnData object with n_obs × n_vars
      = 6484 × 31053
271     obs: 'in_tissue', 'array_row', 'array_col', '
      spot_id', 'region'
272     uns: 'spatial', 'spatialdata_attrs'
273     obsm: 'spatial'
274     620 else:
275         621         raise TypeError(f"`{how}` is not a valid
      type of join.")
276
277 File ~\Documents\Phd_project\sdata\src\spatialdata\
_core\query\relational_query.py:456, in JoinTypes.
__call__(self=<JoinTypes.left: functools.partial(<
function _le...oin_spatialelement_table at
0x0000001D94C0CD2D0>)>, *args=(defaultdict(<function
_create_sdata_elements_dic...2629.000) 71.202315
278
279 [3497 rows x 2 columns]}})), AnnData object with
n_obs × n_vars = 6484 × 3105...spatial', '
spatialdata_attrs'
280     obsm: 'spatial', 'left'))
281     455 def __call__(self, *args: Any) -> tuple[dict
[

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288 3      POINT (11896.000 3967.000) 71.202315
289 4      POINT (2580.000 9487.000) 71.202315
290 ...
291 3492   POINT (10031.000 7206.000) 71.202315
292 3493   POINT (6193.000 12349.000) 71.202315
293 3494   POINT (4878.000 12730.000) 71.202315
294 3495   POINT (4552.000 9870.000) 71.202315
295 3496   POINT (7187.000 2629.000) 71.202315
296
297 [3497 rows x 2 columns]}})), AnnData object with
n_obs x n_vars = 6484 x 31053
298     obs: 'in_tissue', 'array_row', 'array_col', '
spot_id', 'region'
299     uns: 'spatial', 'spatialdata_attrs'
300     obsm: 'spatial', 'left')
301
302 File ~\Documents\Phd_project\sdata\src\spatialdata\
_core\query\relational_query.py:418, in
_left_join_spatialelement_table(element_dict=
defaultdict(<function _create_sdata_elements_dic...
2629.000) 71.202315
303
304 [3497 rows x 2 columns]}})), table=AnnData object
with n_obs x n_vars = 6484 x 3105...spatial', '
spatialdata_attrs'
305     obsm: 'spatial', match_rows='left')
306     415         continue
307     417 joined_indices = joined_indices.dropna() if
joined_indices is not None else None
308 --> 418 joined_table = table[joined_indices, :].copy
() if joined_indices is not None else None
309         joined_indices = Index(['AAACAAGTATCTCCCA-1
', 'AAACAATCTACTAGCA-1', 'AAACACCAATAACTGC-1',
310         'AAACAGAGCGACTCCT-1', 'AAACAGCTTTCAGAAG-1', '
AAACAGGGTCTATATT-1',
311         'AAACATTTCCCGGATT-1', 'AAACCCGAACGAAATC-1', '
AAACCGGGTAGGTACC-1',
312         'AAACCGTTTCGTCCAGG-1',
313         ...
314         'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
TTGTTAGCAAATTTCGA-1',

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315         'TTGTTTCAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '
      TTGTTGTGTGTCAAGA-1',
316         'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
      TTGTTTCCATACAAC-1',
317         'TTGTTTGTGTAAATTC-1'],
318         dtype='object', name='index_right', length=
      3497)
319         table = AnnData object with n_obs × n_vars
      = 6484 × 31053
320         obs: 'in_tissue', 'array_row', 'array_col', '
      spot_id', 'region'
321         uns: 'spatial', 'spatialdata_attrs'
322         obsm: 'spatial'
323         joined_indices is not None = True
324         420 return element_dict, joined_table
325
326 File ~\.conda\envs\spatialdata\lib\site-packages\
      anndata\_core\anndata.py:1085, in AnnData.
      __getitem__(self=AnnData object with n_obs × n_vars
      = 6484 × 3105...spatial', 'spatialdata_attrs'
327         obsm: 'spatial', index=(Index(['AAACAAGTATCTCCCA
      -1', 'AAACAATCTACTAGCA-1... dtype='object', name='
      index_right', length=3497), slice(None, None, None
      )))
328     1083 def __getitem__(self, index: Index) ->
      AnnData:
329     1084         """Returns a sliced view of the object
      ."""
330 -> 1085         oidx, vidx = self._normalize_indices(
      index)
331         index = (Index(['AAACAAGTATCTCCCA-1', '
      AAACAATCTACTAGCA-1', 'AAACACCAATAACTGC-1',
332         'AAACAGAGCGACTCCT-1', 'AAACAGCTTTCAGAAG-1', '
      AAACAGGGTCTATATT-1',
333         'AAACATTTCCCGGATT-1', 'AAACCCGAACGAAATC-1', '
      AAACCGGGTAGGTACC-1',
334         'AAACCGTTCGTCCAGG-1',
335         ...
336         'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
      TTGTTAGCAAATTCGA-1',
337         'TTGTTTCAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '

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337 TTGTTGTGTGTCAAGA-1',
338     'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
    TTGTTTCCATACAACT-1',
339     'TTGTTTGTGTAAATTC-1'],
340     dtype='object', name='index_right', length=
    3497), slice(None, None, None))
341     self = AnnData object with n_obs × n_vars =
    6484 × 31053
342     obs: 'in_tissue', 'array_row', 'array_col', '
    spot_id', 'region'
343     uns: 'spatial', 'spatialdata_attrs'
344     obsm: 'spatial'
345     1086     return AnnData(self, oidx=oidx, vidx=
    vidx, asview=True)
346
347 File ~\.conda\envs\spatialdata\lib\site-packages\
    anndata\_core\anndata.py:1066, in AnnData.
    _normalize_indices(self=AnnData object with n_obs ×
    n_vars = 6484 × 3105...spatial', 'spatialdata_attrs'
348     obsm: 'spatial', index=(Index(['AAACAAGTATCTCCCA
    -1', 'AAACAATCTACTAGCA-1... dtype='object', name='
    index_right', length=3497), slice(None, None, None
    )))
349     1065 def _normalize_indices(self, index: Index |
    None) -> tuple[slice, slice]:
350 -> 1066     return _normalize_indices(index, self.
    obs_names, self.var_names)
351     index = (Index(['AAACAAGTATCTCCCA-1', '
    AAACAATCTACTAGCA-1', 'AAACACCAATAACTGC-1',
352     'AAACAGAGCGACTCCT-1', 'AAACAGCTTTCAGAAG-1', '
    AAACAGGGTCTATATT-1',
353     'AAACATTTCCCGGATT-1', 'AAACCCGAACGAAATC-1', '
    AAACCGGGTAGGTACC-1',
354     'AAACCGTTCGTCCAGG-1',
355     ...
356     'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
    TTGTTAGCAAATTCGA-1',
357     'TTGTTCAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '
    TTGTTGTGTGTCAAGA-1',
358     'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
    TTGTTTCCATACAACT-1',

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359     'TTGTTTGTGTAAATTC-1'],
360     dtype='object', name='index_right', length=
361     3497), slice(None, None, None))
362     self = AnnData object with n_obs × n_vars =
363     6484 × 31053
364     obs: 'in_tissue', 'array_row', 'array_col', '
365     spot_id', 'region'
366     uns: 'spatial', 'spatialdata_attrs'
367     obsm: 'spatial'
368
369 File ~\.conda\envs\spatialdata\lib\site-packages\
370 anndata\_core\index.py:35, in _normalize_indices(
371 index=(Index(['AAACAAGTATCTCCCA-1', '
372 AAACAATCTACTAGCA-1... dtype='object', name='
373 index_right', length=3497), slice(None, None, None
374 )), names0=Index(['AAACAAGTATCTCCCA-1', '
375 AAACACCAATAACTGC-1...TGTAATTC-1']),
376 dtype='object', length=6484), names1=Index(['
377 Xkr4', 'Gm1992', 'Gm37381', 'Rp1', 'Sox1...01147332.
378 1'],
379 dtype='object', length=31053))
380     33         index = index[0].values, index[1]
381     34 ax0, ax1 = unpack_index(index)
382     35 ax0 = _normalize_index(ax0, names0)
383     ax0 = Index(['AAACAAGTATCTCCCA-1', '
384 AAACAATCTACTAGCA-1', 'AAACACCAATAACTGC-1',
385 'AAACAGAGCGACTCCT-1', 'AAACAGCTTTCAGAAG-1', '
386 AAACAGGGTCTATATT-1',
387 'AAACATTTCCCGGATT-1', 'AAACCCGAACGAAATC-1', '
388 AAACCGGGTAGGTACC-1',
389 'AAACCGTTTCGTCCAGG-1',
390 ...
391 'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
392 TTGTTAGCAAATTCGA-1',
393 'TTGTTTCAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '
394 TTGTTGTGTGTCAAGA-1',
395 'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
396 TTGTTTCCATACAACACT-1',
397 'TTGTTTGTGTAAATTC-1'],
398 dtype='object', name='index_right', length=
399 3497)

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382         names0 = Index(['AAACAAGTATCTCCCA-1', '
AAACACCAATAACTGC-1', 'AAACAGAGCGACTCCT-1',
383         'AAACAGCTTTCAGAAG-1', 'AAACAGGGTCTATATT-1', '
AAACATTTCCCGGATT-1',
384         'AAACCGGGTAGGTACC-1', 'AAACCGTTCGTCCAGG-1', '
AAACCTAAGCAGCCGG-1',
385         'AAACCTCATGAAGTTG-1',
386         ...
387         'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
TTGTTAGCAAATTCGA-1',
388         'TTGTTCAAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '
TTGTTGTGTGTCAAGA-1',
389         'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
TTGTTTCCATACAACT-1',
390         'TTGTTTGTGTAAATTC-1'],
391         dtype='object', length=6484)
392     36 ax1 = _normalize_index(ax1, names1)
393     37 return ax0, ax1
394
395 File ~\.conda\envs\spatialdata\lib\site-packages\
anndata\_core\index.py:97, in _normalize_index(
indexer=Index(['AAACAAGTATCTCCCA-1', '
AAACAATCTACTAGCA-1... dtype='object', name='
index_right', length=3497), index=Index(['
AAACAAGTATCTCCCA-1', 'AAACACCAATAACTGC-1...TGTAATTC
-1']),
396         dtype='object', length=6484))
397     95     return indexer
398     96 else: # indexer should be string array
399 ---> 97     positions = index.get_indexer(indexer)
400         indexer = Index(['AAACAAGTATCTCCCA-1', '
AAACAATCTACTAGCA-1', 'AAACACCAATAACTGC-1',
401         'AAACAGAGCGACTCCT-1', 'AAACAGCTTTCAGAAG-1', '
AAACAGGGTCTATATT-1',
402         'AAACATTTCCCGGATT-1', 'AAACCCGAACGAAATC-1', '
AAACCGGGTAGGTACC-1',
403         'AAACCGTTCGTCCAGG-1',
404         ...
405         'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
TTGTTAGCAAATTCGA-1',
406         'TTGTTCAAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '

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406 TTGTTGTGTGTCAAGA-1',
407     'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
    TTGTTTCCATACAACT-1',
408     'TTGTTTGTGTAAATTC-1'],
409     dtype='object', name='index_right', length=
    3497)
410     index = Index(['AAACAAGTATCTCCCA-1', '
    AACACCAATAACTGC-1', 'AACAGAGCGACTCCT-1',
411     'AACAGCTTTCAGAAG-1', 'AACAGGGTCTATATT-1', '
    AACATTTCCCGGATT-1',
412     'AAACCGGGTAGGTACC-1', 'AAACCGTTCGTCCAGG-1', '
    AACCTAAGCAGCCGG-1',
413     'AACCTCATGAAGTTG-1',
414     ...
415     'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
    TTGTTAGCAAATTCGA-1',
416     'TTGTTTCAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '
    TTGTTGTGTGTCAAGA-1',
417     'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
    TTGTTTCCATACAACT-1',
418     'TTGTTTGTGTAAATTC-1'],
419     dtype='object', length=6484)
420     98     if np.any(positions < 0):
421     99         not_found = indexer[positions < 0]
422
423 File ~\.conda\envs\spatialdata\lib\site-packages\
    pandas\core\indexes\base.py:3885, in Index.
    get_indexer(self=Index(['AAACAAGTATCTCCCA-1', '
    AACACCAATAACTGC-1...TGTAATTC-1']),
424     dtype='object', length=6484), target=Index(['
    AAACAAGTATCTCCCA-1', 'AACAACTACTAGCA-1... dtype='
    object', name='index_right', length=3497), method=
    None, limit=None, tolerance=None)
425     3882 self._check_indexing_method(method, limit,
    tolerance)
426     3884 if not self._index_as_unique:
427 -> 3885     raise InvalidIndexError(self.
    _requires_unique_msg)
428         self = Index(['AAACAAGTATCTCCCA-1', '
    AACACCAATAACTGC-1', 'AACAGAGCGACTCCT-1',
429         'AACAGCTTTCAGAAG-1', 'AACAGGGTCTATATT-1', '

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429 AAACATTTCCCGGATT-1',
430     'AAACCGGGTAGGTACC-1', 'AAACCGTTCGTCCAGG-1', '
    AACCTAAGCAGCCGG-1',
431     'AACCTCATGAAGTTG-1',
432     ...
433     'TTGTGTATGCCACCAA-1', 'TTGTGTTTCCCGAAAG-1', '
    TTGTTAGCAAATTCGA-1',
434     'TTGTTTCAGTGTGCTAC-1', 'TTGTTCTAGATACGCT-1', '
    TTGTTGTGTGTCAAGA-1',
435     'TTGTTTCACATCCAGG-1', 'TTGTTTCATTAGTCTA-1', '
    TTGTTTCCATACAACT-1',
436     'TTGTTTGTGTAAATTC-1'],
437     dtype='object', length=6484)
438     self._requires_unique_msg = 'Reindexing only
    valid with uniquely valued Index objects'
439     3887 if len(target) == 0:
440     3888     return np.array([], dtype=np.intp)
441
442 InvalidIndexError: Reindexing only valid with
    uniquely valued Index objects
443
```