

Introduction to the MinION sequencer



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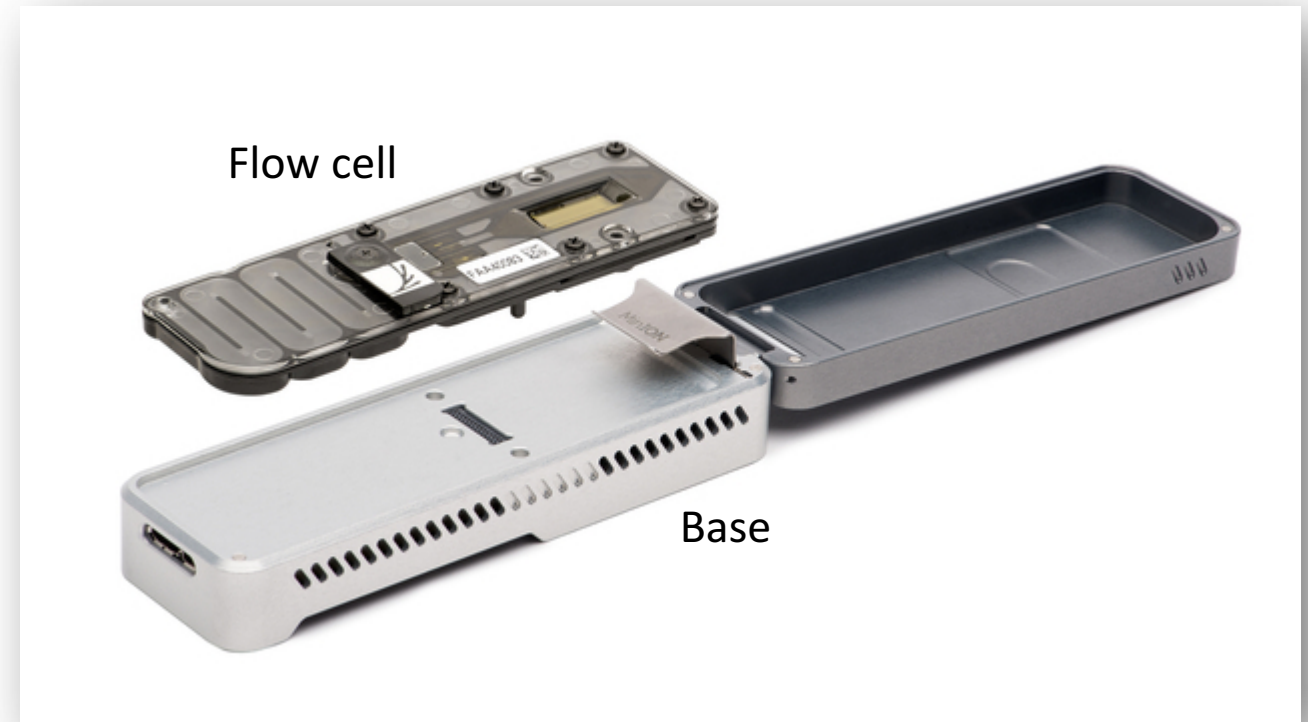
MinION Sequencer

Base

- Connects to Computer
- Fan / thermal regulation

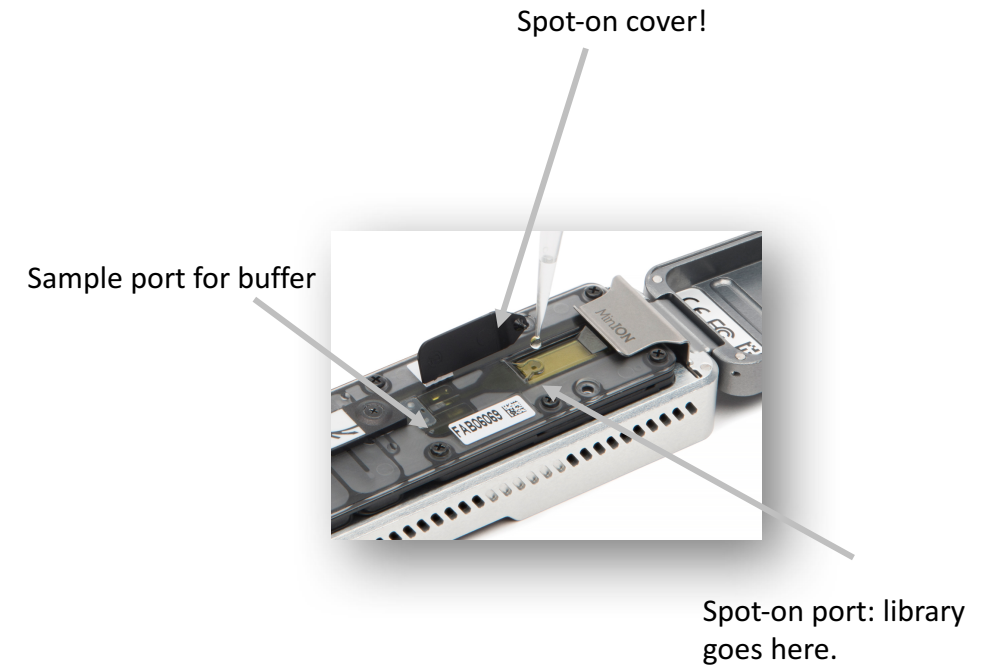
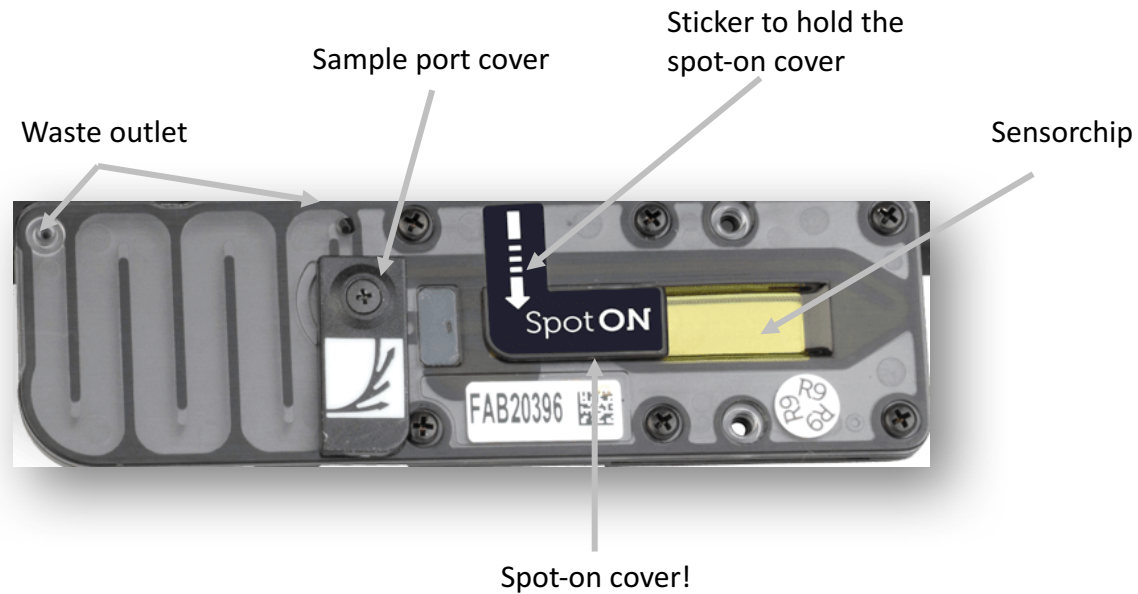
Flow Cell

- Sample goes here
- Includes chip with nanopores
- Enables up to 48h of sequencing (Consumable)



Source: <http://www.the-scientist.com>

Flow cell – Overview



Flow cell

Sample port

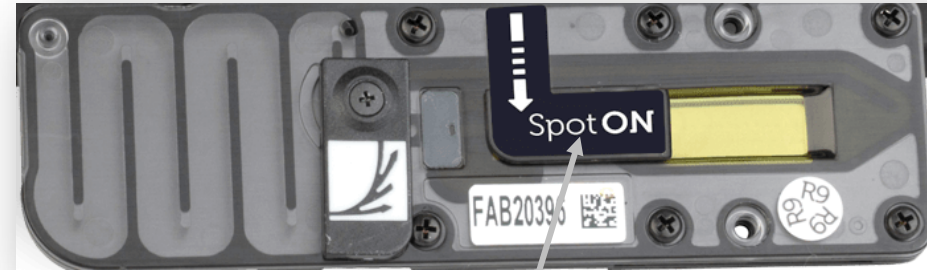
- Main inlet for buffers etc
- Confusing name: Don't put the sample here!
- Used to wash and prime the flow cell before / after use



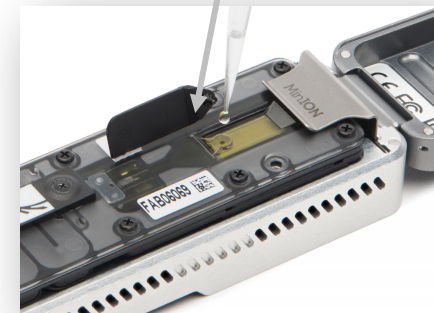
Flow cell

Spot-On port & cover

- Library goes here
- Rigid cover connected to flow cell with a thin sticker.
- **Always keep closed unless you're loading library.**



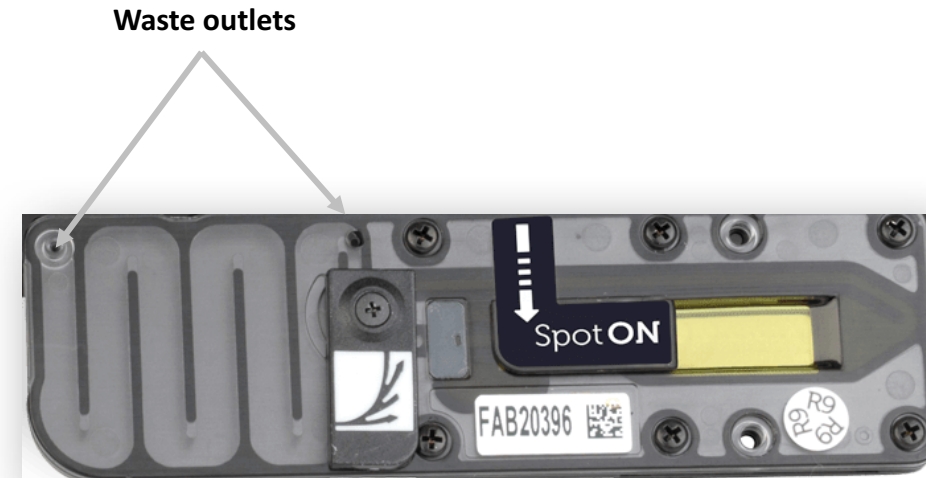
Spot-on port & cover



Flow cell

Waste outlets

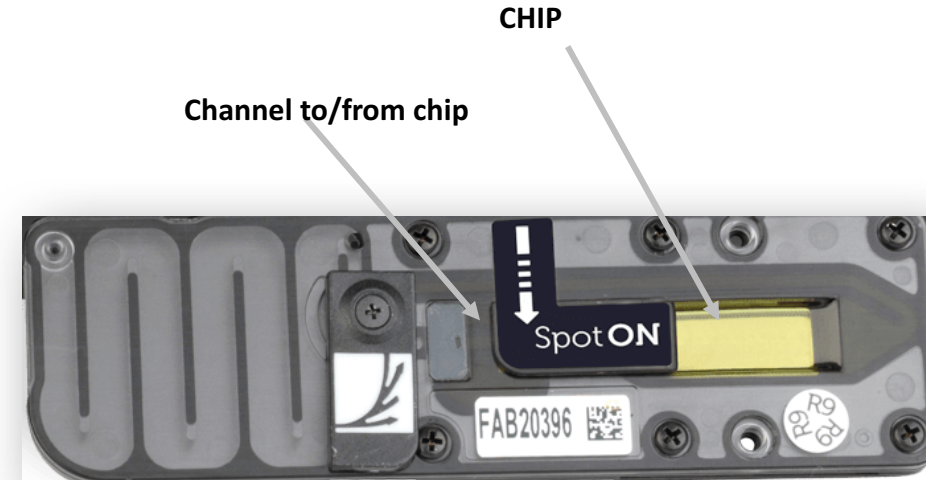
- To remove old primer, library etc using these
- **Never remove liquid from waste outlets unless Spot-on port and Sample port are closed!!**



Flow cell

Chip

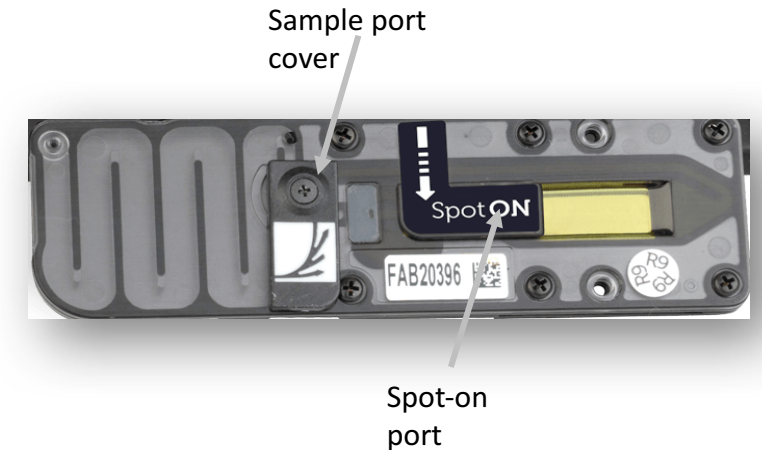
- **NO BUBBLES!!!**
- Always check for bubbles
- While loading sample port always check for air in channels in front of chip



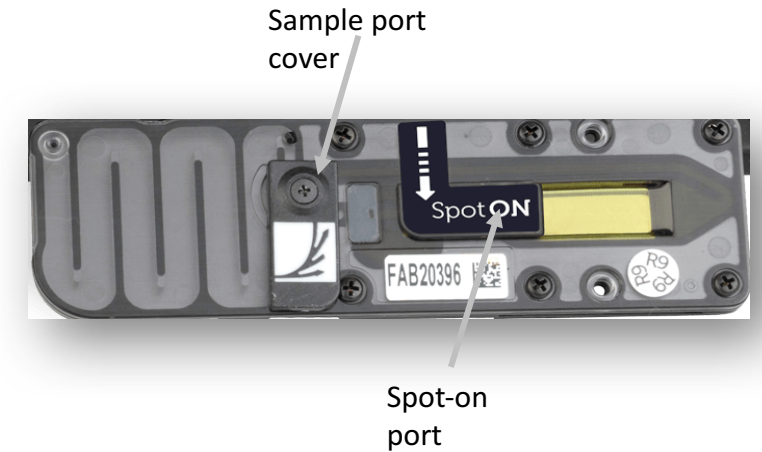
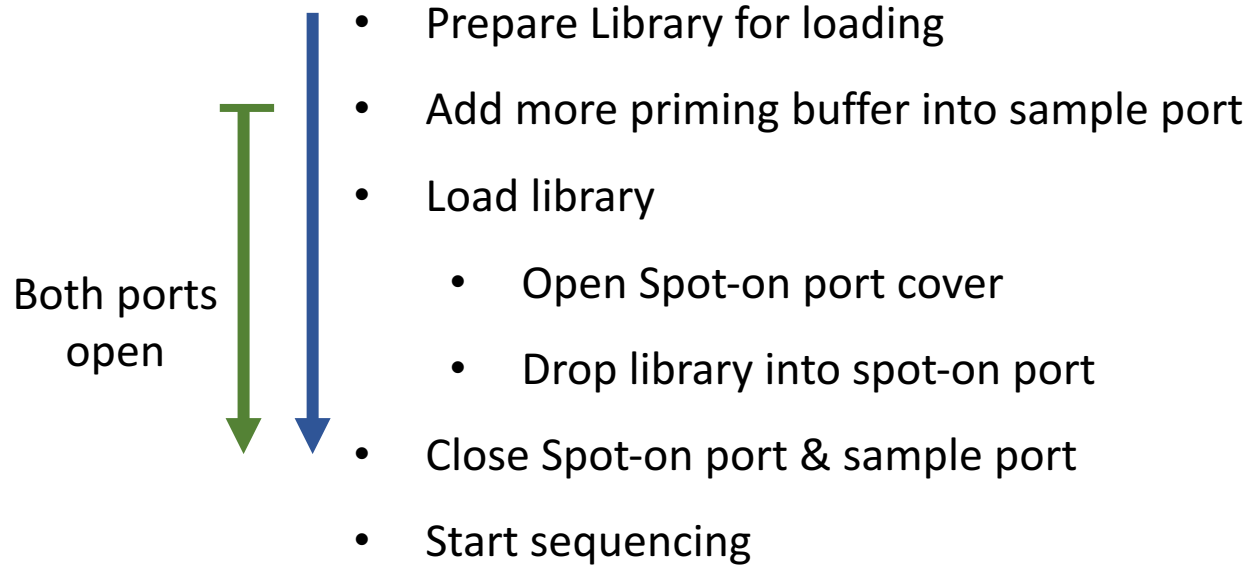
Sequencing workflow

- Prepare library
- Add Flow Cell to MinION
- Quality check of Flow Cell with MinKNOW software
- Load priming Buffer into Flow cell
 - Open Sample port
 - Take a few ul from sample port to make sure there is no air in the port
 - Load buffer (NO BUBBLES)

Sample port
open



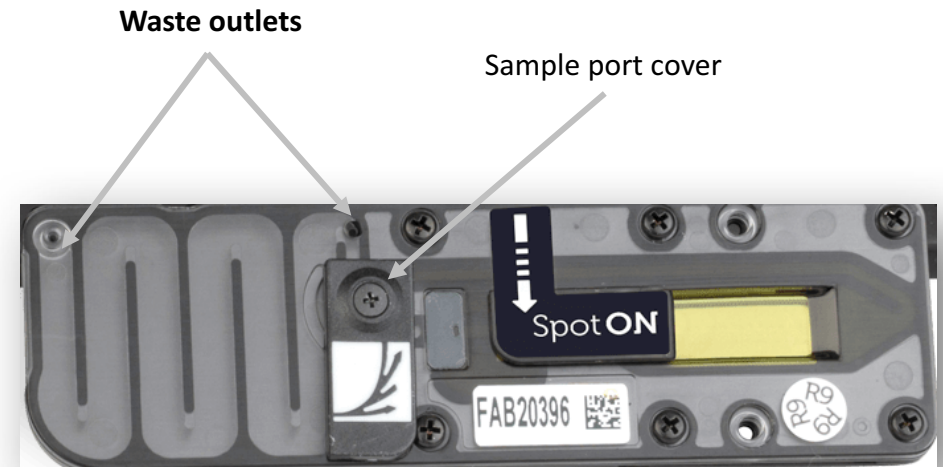
Sequencing workflow



Flow Cell washing (Storage)

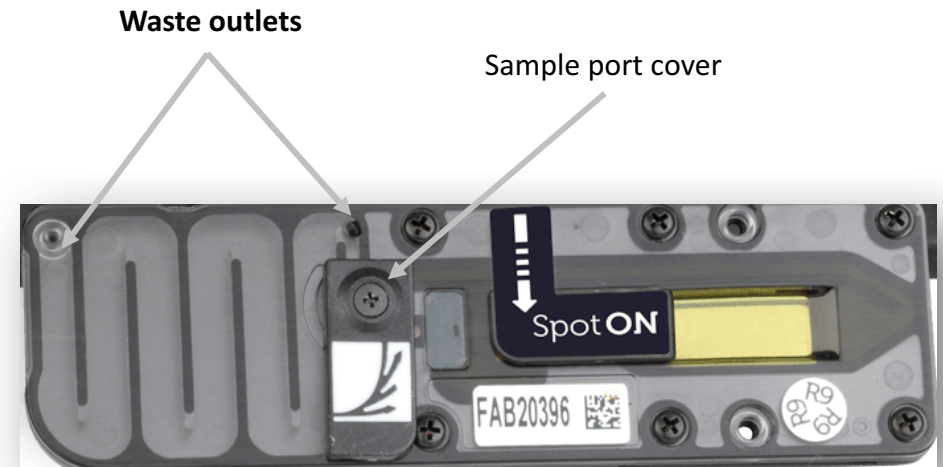
1. Stop sequencing
2. Open sample port
3. Add solution A in sample port
4. Add storage buffer into sample port
5. Close sample port
6. Take old library from waste outlets

Sample port
open



What to keep in mind

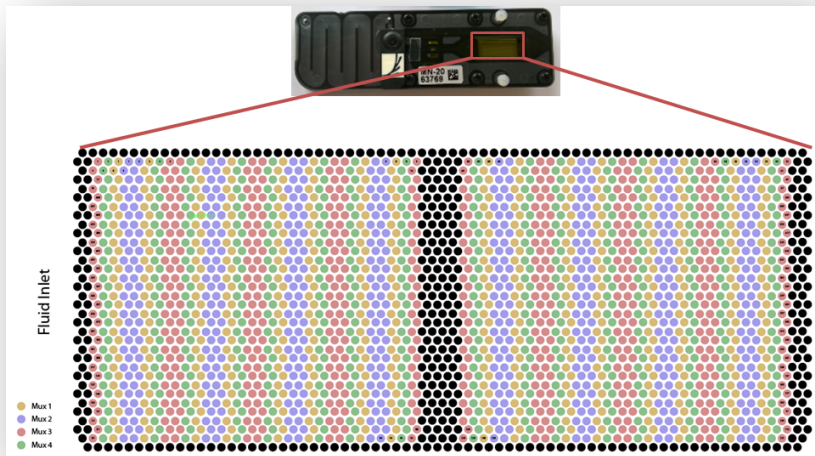
1. No bubbles in the system!
2. Take up a few μl from sample-port to make sure there is no air in it
3. Remove all air from pipette tip
4. Close spot-on port before using sample port
5. Close all port before using waste outlets



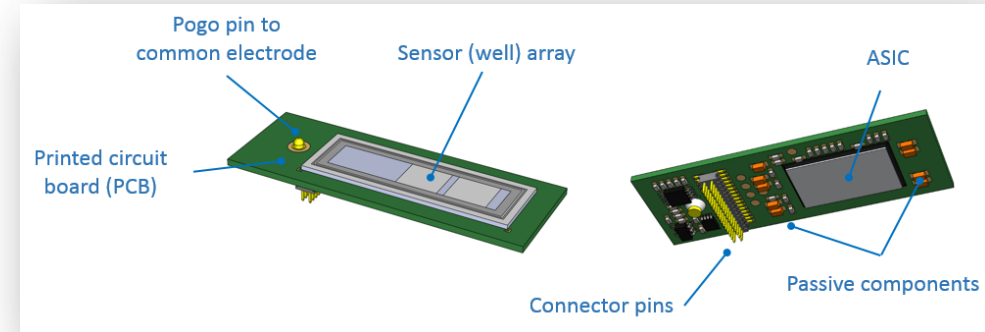
How does it work ?

Flow Cell Chip

- High-density array of circuits
- Circuits measure and control current



Source: <https://community.nanoporetech.com>

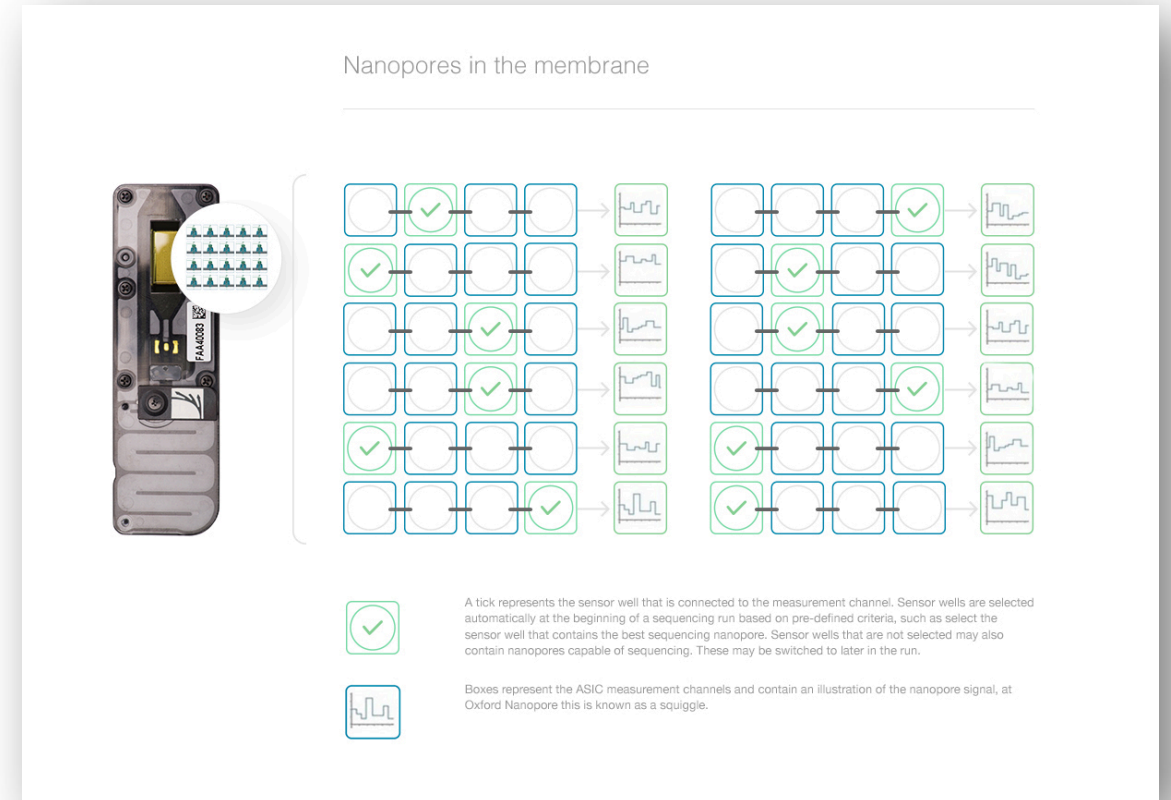


Source: <https://community.nanoporetech.com>

- 2048 (32 x 64) hexagonal wells
 - 512 measurement channels, 4 times multiplexed
- => per row always 4 wells are controlled by one channel

Flow Cell - multiplexing

- During MUX scan the best 512 channels are chosen as group1, second best as group2 etc



Questions?