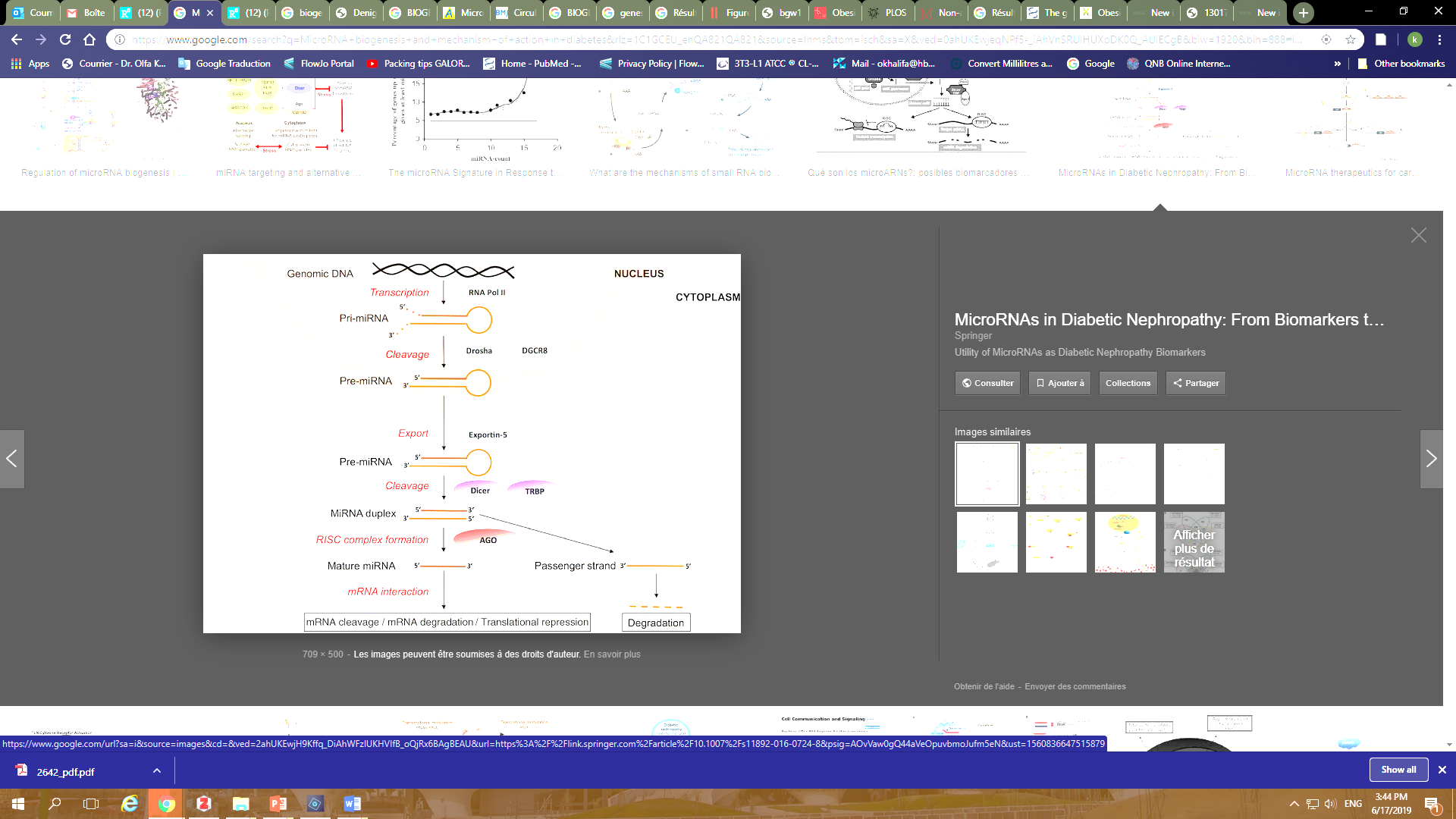
**Nucleus**

**Cytoplasm**

**DNA polymerase II**

**Transcription**

**Exportin-5**



**AAA**

**Exporting**

**microRNA gene**

***Pri-miRNA***

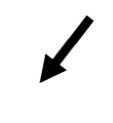
**AAA**

***miRNA duplex***



**Cropping**

***Pre-miRNA***



**Cleavage**



**3’**

**5’**

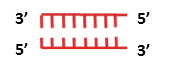
**3’**

**5’**



***Pre-miRNA***

***Mature miRNA***



**Degradation**



**3’**

**5’**



**RISC-complex formation**



**3’**

**5’**

**3’**

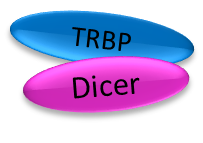
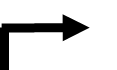
**5’**



**mRNA target cleavage**

**Translational repression**

**mRNA deadenylation**



**Supplementary data 1. Overview of the miRNA biogenesis pathway**. miRNA genes are transcribed in the nucleus by RNA Pol II as long pri-miRNA transcripts that are 5 ′ capped and 3 ′ polyadenylated. The pri-miRNA processed by the Microprocessor complex Drosha-DGCR8, generating a pre-miRNA. The pre-miRNA is exported from the nucleus to the cytoplasm by exportin 5, where is further cropped by Dicer in complex with TRBP, yielding a ~22 nt double-stranded RNA called miRNA/miRNA\* duplex. The functional mature miRNA is loaded together with Argonaute proteins into the RISC complex, guiding RISC to silence a target mRNA through translational repression or deadenylation.