

# FidoCure® Case Study: Ruby Gross

Transitional Cell Carcinoma  
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With the help of FidoCure® therapy, Ruby lived a great quality of life for 2 years after her initial diagnosis of transitional cell carcinoma.



## History and Initial Therapy

Ruby Gross, a 10-year-old female spayed Standard Poodle, was presented to her primary veterinarian for a routine recheck in late December 2018. Urinalysis showed the evidence of blood, so an ultrasound and BRAF test were performed in early January 2019. Ultrasound revealed a bladder mass and the BRAF mutation was detected. After considering treatment options, in March 2019, Ruby's pet parents elected to enroll her in FidoCure® for therapy.

## FidoCure® Analysis

Ruby was enrolled as a therapy only case as the diagnosis revealed the presence of the BRAF mutation. BRAF is a gene that codes for the BRAF protein kinase, which is part of the MAPK/ERK cellular signaling pathway. The human equivalent of this mutation has been shown to be a cancer driver for non-small cell lung cancer and melanoma. This mutation ultimately leads to overphosphorylation of downstream proteins (MEK), which in turn can cause unregulated cell growth and proliferation. Treatment with tyrosine kinase inhibitors that target MEK and BRAF have shown improved efficacy over traditional approaches as evaluated by progression free survival and overall survival in humans.

Treatment recommendations were also based on the reported occurrence of mRNA overexpression in ERBB2 (HER2/neu) in 56% of cases. This alteration is seen in both canine TCC and human carcinomas. ERBB2 (HER2/neu) is a gene that codes for a protein member of the epidermal growth factor (EGF) receptor family of receptor tyrosine kinases. Treatment with an inhibitor of ERBB2 (HER2/neu) may effectively reduce the effects ERBB2 has as potential driver of canine cancer.

## FidoCure® Treatment

Based on the FidoCure® report, in March 2019, Ruby began Lapatinib at 5 mg/kg every other day. Over time, her dose of Lapatinib was increased to 10 mg/kg every other day which she tolerated well. Due to backorder of Lapatinib, Ruby was switched to Trametinib at a dose of 0.02 mg/kg/day at the end of April 2019. At her recheck in June 2019, Ruby's bladder mass was subjectively similar on ultrasound, but her BRAF percentage had decreased. Ruby continued to do well on Trametinib. Since she had been on therapy for almost 18 months, it was decided to stop therapy and monitor her disease in August 2020.

In September 2020, Ruby was evaluated by the Emergency service for straining to urinate. Physical exam revealed an enlarged right inguinal lymph node. Abdominal ultrasound showed her bladder mass to be slightly larger and extending further into her urethra. Ruby restarted on Trametinib at that time, and her urinary signs improved. In November 2020, repeat ultrasound showed her bladder mass to be stable, however, the local lymph nodes measured larger. Cytology of the inguinal lymph node was diagnostic for transitional cell carcinoma. Since she was no longer responding well to Trametinib, it was decided to switch her to Vinblastine to be taken every two weeks. Ruby had mild neutropenia following her second dose, but her right inguinal lymph node measured smaller on exam.

In January 2021 her chemotherapy was put on hold in order for her to undergo surgery to remove a pigmented, bleeding mass on the dewclaw of her right forelimb. Ruby did well initially after surgery, but she presented in late January for lethargy and inappetance. On exam, blood was noted near her vulva and nares. Her anemia had worsened from 31% to 21%, and her PT/PTT were prolonged. Given her declining quality of life, the decision was made for humane euthanasia.

## Conclusion

With the help of FidoCure® therapy, Ruby survived 2 years following her initial diagnosis of transitional cell carcinoma.

## What Ruby's Parents Said



Having worked with you to extend and ease Ruby's life helped reassure us that we had done everything possible. We will always be grateful.

— Ellen Gross

